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Measuring and Reducing Labor Turnover

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LABOR turnover may be defined as the mobility existing in the working force of an organization. It is the shifting in the labor force which results from the fact that for many reasons, men leave their jobs. In short, every employee who leaves the employ of a given establishment, no matter what the reason be, constitutes a part in the turnover of that concern. A study of labor turnover involves the analysis of the causes and effects of why men leave their employment and the means of preventing such terminations as may be unnecessary and undesirable.

Labor turnover is measured in terms of the proportion of those who terminate their employment in a definite period of time—usually one year is the assumption unless otherwise stated—to the average number who have been on the active payroll during the same period. In other words, dividing the number of men who leave, by the number of the total working for the same period of time, gives the ratio of labor turnover.

However, it must be noted here that there is by no means complete agreement as to what turnover is and how it ought to be measured. There is a second method of considering it which is based primarily upon the principle of replacement and which views turnover as occuring only when the cycle has been completed from the hiring of a worker to the hiring of his successor when he leaves. According to this method, the percentage of labor turnover for any given period is derived by taking the total replacements for the period considered and dividing by the average number on the payroll. Undoubtedly there are many favorable points for this method. The most essential one is the fact that it indicates the success with which the needed working force is being maintained and the needed amount of production being turned out. It assumes, however that there exists standardization of the plant's production in terms of each worker's day's work and of a standard total day's output of the plant—and these are conditions which are frequently lacking because the necessary degree of control over the volume of production can only begin to be obtained by scientifically managed plants. It is only where standard performance is known that there is a basis of comparison between expected and actual production.

A third method of computing labor turnover takes into consideration the rate of fluxion or the ebb and flow of labor. It consists of the following formula: $R = \frac{A+S}{W}$ in which R is the rate of labor fluxion, A stands for the number of additions to the force, S denotes the number of separations from the force, and W the number of fully-employed-worker, labor-time units of 3,000 hours put in by the work force during the period concerned. Although this measure has several scientific advantages over other plans, it has as yet not received the attention it deserves. The reason for this probably exists in the fact that in arriving at an approximately correct figure for W in the formula requires a good deal of care in record keeping.

For practical purposes, the use of the first method, namely that based on the ratio of those who terminate their employment to the total working force is still valuable. Measuring turnover of labor by

this yardstick has this advantage: it focuses attention on the individual worker who leaves; and it is the individual worker from the viewpoint of analysis and diagnosis of labor troubles that is the one in whom interest is centered. In short, the turnover of labor is not something to be considered by itself, to be measured and discussed only in relation to a standard output. To be sure, it has a close effect upon output, but labor turnover is rather a symptom than a disease and like all symptoms it is of interest to the practical person only in so far as it points to the nature of causes of maladjustment, and thus leads to corrective measures.

Workers usually leave a job because of some dissatisfaction and the effect from the administrative point of view must be to discover the source of that dissatisfaction. If the figures of labor turnover are in terms of separations, they are, therefore, in terms of dissatisfaction, provided proper allowance has been made in the computation for other non-personal causes.

If all the workers in a department or in a whole plant go out at once, the event is spoken of as a strike, and the board of directors at once inquires of the manager as to the reason for it and the nature of the men's demands. Indeed, the management may be severely censured for letting an interruption of work occur, but the management does not always so readily see that labor turnover—or the largest single part of it—is simply a strike by erosion, about which they should also be greatly concerned. It is the gradual wearing away of the working force one at a time, due to some cause and some demand which is unvoiced in any formal way because an adequate channel of communication or adjustment is not provided. It is exactly as important to find out and meet this demand, when it is a just one, as it is in the case of a strike.

Formula of Labor Turnover

Reduced to its simplest terms, the formula for the determination of labor turnover would be:

$$T\ (\text{Turnover}) = \frac{S\ (\text{Total Separations})}{F\ (\text{Average force on payroll})}$$

As it stands, however, this formula is too simple to disclose much about the meaning of the figures of separation. Some modifications in the method of computation are essential. Hence it is urged that the figures of workers leaving be itemized in ways that give them significance. An initial division usefully may be made between resignations, discharges, lay-offs and separations for health reasons. Under one of these headings each departure may be classified.

The figure F may be calculated in several ways, but perhaps as simple a method as any is to use the total payroll figure of the departments in question. If the average force for a year is sought, these fifty-two amounts may be added and divided by fifty-two to give a yearly average. If the figures represented by S are obtained in terms of a week, in order to get the standard labor turnover figure, T should be multiplied by 52; although the resulting figure will mean only that the turnover for that week was at the rate of such and such a per cent per year.

When, however, fifty-two consecutive actual weekly percentages are available, the total of those fifty-two will give the actual yearly turnover.

For more detailed analysis of why men leave, it is very desirable to divide each of the four major headings into several sub-headings. The following arrangement is suggested, with clear recognition of the revision that it will require as it is used in specific instances.

1—**Resignations**: (a) Better job; (b) Dissatisfaction with wages; (c) Dissatisfaction with work; (d) Unable to get along with superior; (e) leaving city; (f) change of vocation.

2—**Discharges**: (a) Careless; (b) Incompetent; (c) Unreliable or irregular; (d) Insubordination; (e) Liquor; (f) Misconduct; (g) Dishonesty; (h) Trouble-breeder.

3—**Layoffs**: (a) Decreasing force; (b) Lack of work.

4—**Physical reasons**: (a) ill-health; (b) injured; (c) Died.

In addition, a separate record should be kept marking each departure as avoidable or unavoidable. This distinction in many cases will be difficult to make, as for instance, "unable to get along with superior" when given as a reason by a worker of conspicuous emotional instability, is an unavoidable resignation, but then there is the possibility of the fault lieing with the superior, and if so it is clearly an avoidable separation for which some remedy should immediately be devised.

Any wide agreement as to which causes for leaving are avoidable or unavoidable will undoubtedly be difficult to secure, but wide agreement is not so much needed at first as agreement of all concerned in one plant to keep its own figures consistently on the same basis over a period of years so that they are valid for purposes of comparison. For after all, their major purpose is to reflect from time to time the success of the management in reducing avoidable causes of dissatisfaction.

Of course, there is no limit to the refinements that can be made in the turnover figures. For example, complications due to the permanent reduction or the permanent increase of the working force during the period in which the amount of turnover is sought have occasionally to be met. In the interest of emphasizing the main idea of analyzing the remediable causes of dissatisfaction, no further modifications in formula or in the forms for recording it are suggested.

Figures showing the gross turnover of labor do not however, necessarily indicate a great deal. The more itemized and localized they may be, the more significant they become. For example, turnover records when presented by departmental divisions often show one or two departments to be the principal causes of high turnover, and when kept by rooms or machines they may indicate that it is one particular operation or one foreman who is causing much of the trouble. In like manner, the segregation of turnover by sex, by age, and by wage groups may reveal discrepancies in company procedure that will otherwise remain unsuspected.

In short, the purpose of any labor turnover compilations should be not to cover blank forms with figures, but to show where disaffection exists, why it exists and how much of it may be eliminated.

There is considerable value, also, in figures which show the length of employment of workers who leave. It, as is often the case, the greatest turnover comes within the first six months of employment, it is likely to argue some deficiency in methods of selection or training. If it comes from workers of long standing, then it may indicate little opportunity for advancement in wages or in kind of work. When carefully scrutinized, facts about length of employment of those who leave are likely to be very enlightening.

Finding the Causes of Labor Turnover

The above discussion is of course based on the assumption that the company has accurately discovered the reasons of each individual's leaving. Indeed, the absence of a centralized employment office through which all leavers are required to report, makes the chances of getting the true causes for leaving very slim. Workers usually will not or do not tell foreman or timekeepers the real reasons for leaving. But the chances of accurate analysis are greatly increased if some tactful person in the employment manager's office is required to spend several minutes in considering in private interview with the worker his reasons for going.

One thing to be cautioned against is the danger that the interviewer will put into the departing worker's mouth some reasons which the worker will immediately take up and repeat back without ever disclosing what is really on his mind. The only way to prevent this is for the employment manager to be impressed with the fact that the leaving workers are the ones who feel most strongly about the shortcomings of some aspect of the company's labor policy, and that it is of first importance that their uncolored testimony be secured.

Cost of Labor Turnover

Although labor turnover is not a matter to be dealt with independently, its costs may to an approximate degree be figured separately, and a compilation of the turnover cots for a given job, department, or plan may be exceedingly useful as providing a good argument for changes and improvements, of course, such costs cannot be computed with perfect accuracy, but enough of the items may be segregated or closely estimated to present a conservative statement of the losses in production and in indirect expense due to high turnover.

The following is a list of items of cost which is illustrative if not exhaustive, as showing the charges involved in labor turnover, which are not ordinarily taken into account.

These costs may be roughly divided into overhead costs and operating costs.

Among the overhead costs are:

1—More rapid depreciation of machinery because of ignorance or lack of skill of new workers.

2—Extra floor space and extra machines to provide against idleness of a certain amount of machinery due to shifting labor.

Operating Costs may include any or all of the following:

1—(a) Time spent by foremen or superintendent in discharging a worker where that is the manner the vacancy occurred.

(b) Time spent by foreman or other workers in training the new employee.

(c) Time spent by clerks on additional payroll or other records.

2—Machine Costs, covering:

(a) Time machinery is idle when a new worker cannot be obtained immediately.

(b) Idle machinery for temporary stoppages due to ignorance or lack of skill of new worker.

(c) Repairs to machines or renewals of tools broken for the same reason.

3—Material Costs, including:

(a) Waste or damaged material due to ignorance or lack of skill of new worker.

(b) Difficulties in subsequent processes due to poor work by new employees in previous processes.

(c) Lower production while new employee is working up to his best skill.

4—Additional accident cost due to higher rate of accident among new employees.

It should be noted here that too much stress should not be placed on the face value of figures of labor turnover and its costs. Conclusions should be drawn always with caution, until methods of compiling them and the reasons for compiling them are known. As a general index and barometer of the trend and current of the labor organization, labor turnover figures, if carefully prepared, are useful.

A situation which is sometimes met and in which the figures if viewed superficially fail to reveal the fact that there exists a rapid turnover among 15 or

20 per cent of the force, while the other workers remain fairly constant. What is needed is a measure of labor stability. According to the United States Coal Commission, labor stability is defined as "The stable force is that group of individuals who were not separated from the payroll during the years. An absence of two or more pay periods constitutes a separation."

The ratio or percentage of stable force is computed by dividing the number in this group by the average working force. It permits the employment management to recognize the real magnitude of the labor turnover by noticing the proportion of the force among which it takes place. For example, one company showed a labor turnover percentage of 198 and a stable force percentage of 40. These figures mean that practically twice the average number of employees on all jobs left only a little more than half the jobs in the district. The labor turnover figures alone do not show the seriousness of this situation.

Account must be taken of the fact that some turnover may be a natural measure of self-defence against the monotony of certain kinds of work. A degree of shifting from one plant to another may under present conditions be a healthy and socially desirable protest against present methods of utilizing people. At any given moment in one plant, it may be impossible to do much to compensate for the sameness and dullness of the work, and in such a plant to attribute inefficiency to the employment office because of a high labor turnover is unfair. This is a use of figures without taking into consideration any other factors.

There is, indeed, a real danger that managers who have installed employment departments will take it as axiomatic that the amount of turnover is a direct index of this department's efficiency. It may be or it may not, but until the figures are carefully analyzed and compared with those of previous years and of other plants similarly situated, it is unscientific to draw this conclusion.

Remedies for Labor Turnover

If turnover is a symptom of some maladjustment, the cure should remove the symptom. One outstanding remedy is the introduction of functionalized employment offices in charge of trained executives of a superior type. This invariably results in an immediate and marked reduction in the amount of labor turnover. It is a fact that one office specializing in selection and in the subsequent adjustments, has almost without exception brought labor turnover within a one year period from an abnormal and excessive figure to one more reasonable and normal. The evidence obtained from the figures of many companies is conclusive on this point.

Labor Loss

Finally, mention should be made of a somewhat more elaborate plan of computing all the labor losses in terms of productive hours which the plant suffers each day or week. Under this method, labor loss is conceived as a combination of the following measurable factors:

1—Original failure to secure the right or standard number employees.

2—Failure to maintain the number of employees regularly up to standard.

3—Hiring new workers to replace lost ones.

4—Poor attendance (absenteeism and tardiness).

This method is based on the assumption of a standard working force and a standard flow of production. The figure of labor is based on divergence from this standard caused by the factors just listed above. The only criticism of this method lies in the fact that the great majority of plants could not use it because they have as yet not determined what for them is a standard work force or a standard day's work per unit of man power. This method requires not only merely good cost accounting records, but good planning, routing, and scheduling procedure.

Angular and Vertical Belts

By W. F. SCHAPHORST, M.E.

THE following letter, which I believe is of considerable interest, was received recently from an eastern belt manufacturer:

"Rules for figuring horsepower are always based on horizontal belts—not on vertical or sloping belts.

"How much percentage, if any, should one deduct when the belt runs at a 45 degrees angle, as shown in the enclosed rough drawing? This drawing refers to a pump drive, but the customer does not say what kind of liquid it pumps. His belt has to be run so tight that the metal fasteners cause considerable trouble. They keep pulling out.

"I have looked through all of the literature we have on file but find no rule for inclined or vertical belts. Do you know of such a rule that shows how much to deduct from the regular horizontal horsepower tables?

"One rule for a horizontal belt gives 83 hp. for attached sketch, and another makes it 77 hp.

"Question: How much shall I deduct on account of the 45 degree incline? Advice will be appreciated."

The sketch to which he referred was so simple that I am sure any reader can imagine what it looked like—a drive that sloped 45 degrees,—half way between horizontal and vertical. I shall therefore not reproduce his sketch here. I answered as follows:

"To find the capacity of a vertical or inclined drive, whose angle with the horizontal is greater than 40 degrees, subtract the angle of inclination from 140. The result is the percentage of capacity of the belt as compared with a horizontal belt of the same size.

"Thus, where the angle of inclination is 45 degrees as in your case, 140—45=95 per cent=the capacity of a belt at 45 degrees. Or to reply definitely to your question—Deduct 5 per cent on account of the 45 degree incline.

"You will find on applying this rule to a vertical belt that 50 per cent would be deducted. Fifty per cent may look pretty steep but for year in and year out service I recommend it for most drives. It is well to always play safe."

The Process of Sulphite Manufacture

Part V—Cooking (Cont'd)— Relief and Recovery Systems[1]

By FRED MOTSCHMAN
Member of T.A.P.P.I. and Sulphite Chemical Engineer

WE have already covered the field of cooking in a general way. This is really the only manner in which the subject can be treated unless you and I were to get together and discuss the pros and cons of your mill versus mine. Even then we probably would not agree very closely when it came to the more minute details. To prove this point one need only be in on one of our group discussions concerning the use or non-use of the side relief.

The subject of relief should be a good connecting link between our subject treatment of the last meeting and our present talk. First of all, why have a relief system? To answer this directly, I would say—to control the cooking. We have definite curves to follow, temperature and pressure, which have been drawn according to preconceived ideas as to the best and shortest route to the pulp of the quality which we desire. When the digester is charged, we put in enough "combined" base to satisfy the non-cellulosic part of our batch. The free SO_2, however, must be present in considerable excess for two reasons: first, to hold the calcium bisulfite in solution, and second, to speed up the first or penetration period of the cook.

When a digester is first put on, there is trapped in the system a certain amount of air. We must get rid of this air early in the process as it would give us erroneous readings. If this air were to remain in the system, our pressure would be built up too rapidly upon steaming, as air is not appreciably soluble in the cooking liquors. Getting rid of this "cold air", as it is usually termed, is as essential in proper digester manipulation as it is to have air vents on your home radiator systems. No doubt you have made the acquaintance of one of these rooming house radiators which blows out promising music of escaping air, but which never gets more than barely luke warm, because it shuts off the vent just before the steam gets up to your floor. Even pulp dryer crews have been known to swear that you cannot dry out the sheet of pulp on the first hour or so of the first shift on Monday until you get all that iron hot. When you look behind this problem of theirs you will probably find that the real reason for the sluggish heating up of the dryers is that the air is not being properly vented. They too have their "cold air" problem. Personally, I consider the proper point for the disposal of digester cold air to be real problematical. In the first place it is neither **cold** nor yet **air** but varies all the way from weak, warm gas to very hot SO_2. For the short while that it is very dilute SO_2, it might well be vented to the tail gas scrubber but after about forty minutes to an hour this gas should be cooled and put into the early part of the recovery system. The physical explanation of the nuisance of "cold air" in the radiator, dryer cylinder, or digester, is that it creates what we term an inert phase in the system and develops pressure which slows up the entrance of the active component—the steam.

Steam is admitted to the bottom of the digester at such a rate as to bring the pressure on the vessel up to 70—75 pounds in about two hours. This period may be shorter or longer according to how fast we plan to cook off the batch. Two hours is a good average time, however, for a normal cook of say 10—10.5 hours. When this pressure is reached the temperature of the liquor will be very close to 212° Fahr. (100°C).

If the vessel is now at the pre-determined pressure, the steam regulator cuts in if the digesters are regulated by pressure regulating devices, otherwise the cook shuts off the steam valve by hand. The regulator system makes for better operation because it is ever watchful of pressure changes due to relief valve manipulation and it keeps a pre-determined pressure on the vessel. This uniform pressure control is a positive factor in the production of a uniform pulp and incidently does away with many of the shell strains due to an accidently high pressure when the operator forgets to check a steam valve which he has left open. If you decide that your pulp would be of better quality if made at a pressure of 70 lbs. maximum instead of the usual 75 lbs., have the regulators cut out at the new level and then watch for results. It is an unusual operator who can hold eight or even four digesters at a given pressure for many successive hours. He may average the required pressure, but averages sometimes cover up a lot of important variables.

In order to get more temperature on a digester at a given pressure, the relief valves must be opened and in order to keep sulphur costs down, ingenious recovery systems have been worked out. All of these systems have been worked out on the principle of the heat exchanger.

To my mind the Decker type is the logical one

[1]Part I of this series by Mr. Motschman was published in the April, 1928 issue of The Paper Industry; Part II in the May, 1928 number; Part III in the September, 1928 issue, and Part IV in the December, 1928 issue.

because here we have a system of heat and SO_2 recovery from a partly cooked batch into another batch which is just going on. Both the heat and gas are taken up without the losses which go with the use of intermediate steps. All recovery systems are designed to deliver excess chemicals to succeeding batches and the most logical system for this recovery is the closed system of the digester itself.

Other types of relief systems have been designed which consist of coolers through which the gases are conducted on their way to be reclaimed in storage acid. Such systems, in order to increase their cooler efficiency, use a device known as a **separator**, an enlarged section in the relief line where the liquors which are being carried by entrainment in the relief, are trapped out by gravity and are drained from the bottom of the chamber. The dry gases are then more easily cooled and also the storage acid is not polluted by the by-products of cooking. The need for a separator in the relief line is dependent on the concentration of solids in the cooking liquors. In slow cooking of spruce wood, the colors of the waste liquors are never very dark and these by-products are not harmful at this low concentration. In fact it has been proven by experience and experiment that small quantities of relief liquor actually expedite the cooking reactions. Where a separator is used, there are two general rules which should be observed in order to most efficiently separate. These laws are derived from those which were quoted in the general rules for acid making (The Paper Industry, pg. 234, May, 1928), but in applying the **temperature** and **pressure** rules to this stage of operation, we must realize that the obverse of a rule is one of its applications. In acid making systems we hold for the lowest possible temperature and the highest operating pressure; in the separator system in order to keep down the sulphur content of the liquor out of the separator, the vessel is held at not over four or five pounds pressure and as hot as possible.

In designing a separator, whether for a digester house relief line or for a paper machine vacuum pump, the mechanics of separation, should be kept in mind. It may be cinders which you are trying to separate from flue gases, or it may be, as in the above mentioned cases, that you wish to rid a moving gas of its burden of liquid particles. These particles are being carried by entrainment, as we call it; they will continue to be carried through the velocity of the gases. If we wish to drop them out of the mixture the velocity must be lowered, at least momentarily. In order to slow down the gases we merely bring them into a chamber whose cross-section is equal to several times the cross-section of the gas line in which they are flowing. As the gases slow down, the heavier particles (liquid or solid) are no longer swept along but now begin to drop out of suspension. The best type of simple separator for digester relief will consist of an acid proof, brick lined, upright cylinder of about 6′ x 10′, provided with three openings, namely a gas inlet, a gas outlet, and a liquor outlet. The two outlets should preferably be as far apart as the longest

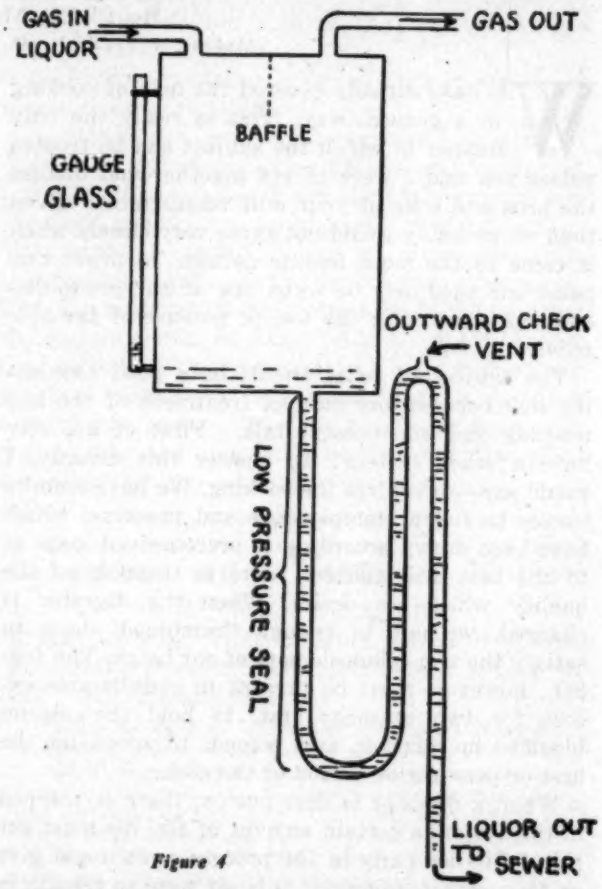


Figure 4

dimension of the receiver will allow, the liquor leaving the bottom of the vessel, of course. To prevent "short-circuiting" of the separator, there should be a baffle extending down from the top of the receiver between the gas inlet and gas outlet pipes. See Figure 4.

A recent application of a unique reuse of cooking liquors and a closed system of relief from one digester with recovery of the heat and gases by others in the series may be seen in a review of U.S. patents 1,646,084 and 1,653,416. To quote Mr. T. L. Dunbar, patentee (1,646,084), the main objects aimed at in his "Acid Accumulator System" are:

1—Recovery of part of the waste liquor, or even the whole of it, if the sulphite mill is operated in conjunction with a sulphate mill.
2—Pretreatment of the chips with a mixture of waste liquor and fresh acid.
3—Controlling the cooking pressure independently of the temperature, so that digestion may be carried out at a higher pressure than that corresponding to the pressure of saturated steam used for heating the contents of the digester.
4—Obtaining efficient counter current circulation of the liquor through the digester.

Undoubtedly as this sort of development progresses, some one will come out with a plan of continuous or counter current cooking. The plan will have a number of digesters in series, and as number eight is about to blow, No. 1 will be ready for its pre-treatment of hot water liquor. A constant quality of fresh acid will be supplied to the system to make up for that which goes with the pulp to the blow pits plus what is wasted to the sewer. We might also consider a system such as this where the reuse of liquor would build up the concentration of solids in the waste liquor to a point where it would be more profitable to run black ash furnaces. This recovery system will then make soda base sulphite cooking more attractive from a cost stand point.

Blowing the Digester

Present day practice usually calls for a blow down period at the last hour of the cook. During this hour the total pressure on the digester is reduced from 75 lbs. to 50 lbs. or less. Primarily the purpose of this procedure is to relieve and recover most of the residual SO_2 left in the liquors and thus help to lower the sulphur figure. There are at least two other important reasons for this blow down period. They are: 1—**Cleanliness** of stock by reason of shattering fewer knots (with their adherring black inner bark) against the target; 2—**Stronger pulp** from milder disintegration of the softened chips and less serious explosion of the fibers themselves.

When the digester has been relieved down to blowing pressure, the blow pit man is given warning by signal light or horn, the pit closed, and the charge blown over into it by opening the blow valve. To aid in the passage of the charge through the 10″ blow line, the so-called "end steam" valve is opened at this time. The end steam is so placed that its stream is directed across the bottom tee fitting and into the blow line, thus we get somewhat of a siphon effect. Sometimes digesters are hooked up so as to have only one steam inlet at the bottom, but the vertically directed steam for cooking purposes and the horizontally directed steam for use in blowing are the best arrangements and should be followed where possible.

The blow pit is either a rectangular or cylindrical tank of such dimensions as to hold at least two charges from the digester with which it is connected. The discharge end of the blow line from the digester enters the pit at some point near the top of the tank. Where round pits are used, the line is put through the pit side wall so that the pulp stream will strike the wall tangentially and so not bring the full shock of the blowing pressure upon the pit walls. To further protect the walls, it is general practice to place cast iron targets where the stream impinges. These targets break up the softened chips and also prolong the life of the wall staves (when the pits are built of 6″ pine staves). Some mills use concrete pits, but here also target plates are used because the action of hot sulphite waste liquor is quite severe.

The blow pit is built with a false bottom about eight inches to a foot from the true bottom. This false botom may consist of hard pine planks (3″ x 10″) drilled to within about 3/16″ from their topside with a taper drill. The hole is then completed with an ordinary 3/16″ twist drill. In order that this hole shall present no burrs upon which fibers might build up, and thus form an impediment to free drainage from the pit, the holes are seared out with a hot iron. There is also a perforated tile on the market which is designed especially for drainer bottoms such as these blow pits require. They are especially good as regards uniformity of perforation and the hole does not wear larger with use as does that in the wooden bottom. Their chief disadvantage is that they may become cracked and broken by heavy material which sometimes finds its way into the blow pit.

In order to pump the stock out of the blow pit, a well is sunk into the false floor of the pit and from the outer face of this well a stock pipe leads to the main stock line or to the suction of the blow pit stock pump itself. There is a gate valve in this line close to the well so that not too much stock can settle in and give trouble when the stock in the pit is wanted.

The space between the two bottoms is, of course, left as open as possible, but supports for the false bottom have to be provided in the form of blocking. There is also an outlet pipe from this space which leads into a waste liquor line (frequently known as the "Bindex line"). This outlet is provided with a gate valve placed between the pit and the mainline. For use in case of trouble, it is well to have two gate valves on this outlet line. Have a 6″ x 6″ x 2″ tee put in between the two valves and have a good pressure water line connected in so that space between the two bottoms can be flushed out occasionally with the water and inner 6″ valves opened and the outer 6″ closed. When the water shows up in the empty pit, close the 2″ and open the outer 6″ valve and drain to the sewer or saveall, if provided.

A similar arrangement of double valves and water line must be provided in the stock outlet line. Here the water line is for use in starting the stock out of the pit after washing. When the blow is sufficiently washed, the inner stock valve is opened, the outer one shut tight, and the full force of water turned on. This water enters the well and will bore a hole up through the stock to the thinner top layer of pulp, so that when the outer gate is opened and the water shut off, the pulp will flow to the suction of the pump.

Before the blow valve is opened the pit man should have his pit ready. This means that he should have

the manholes locked down, all bottom outlets closed, and the space between the two bottoms full of water. The only opening from the pit then will be the gas outlet tower, or vomit stack, to the atmosphere. He should make the pit thus ready when he has washed out the last charge and so avoid the danger of being short of time when the warning signal is given by the digester house that another charge is to blow. Even though this procedure is standard, the helpers from the digester house should never go to open the blow valve until after they have actually spoken to the blowpit man and received his word that everything is "O.K.".

When the stock has been blown over into the pit —the usual time is from 10—20 minutes—no time should be lost in first drawing away from the stock as much of the concentrated waste liquor as the liquor recovery system calls for and as much more as will freely drain from the stock. If the mill does not have any liquor recovery system, then the wash water should be turned on at once and the drain valve left open to the sewer. The water used to cover the stock here in the blow pit should be as warm as possible since there is a possible chance of increasing the bleach costs through the use of very cold water. The action of the cold water striking the pulp is one of re-resinification (just split that one up into little ones and it is not quite so awful as it sounds at first. The word means just what it says. To put back the resin, or in other words, to coät the fibers with pitch (resin) as they were before they were cooked). Once the cold water has set the stain from the waste liquor on the fibers, it means more bleach liquor to repeat the work already done in the digester. It is a very good plan to work in white water at this point. The white water will be warmer than the fresh water and also you will recover some of the fibers from the white water by using it at this point. The heat exchange between the hot pulp and the wash water is the point which should be emphasized when trying to get the wash water started early.

Washing and Recovery

Present day methods of washing stocks are rather inefficient. The normal time given to this operation is around three hours. When the cost of stainless alloys is brought down to a lower figure, we will probably use one-fifth to one-sixth of this time to pump this hot stock over an Oliver type of washer where it will receive a very thorough washing as the sheet is carried past hot water sprays.

It is not general practice in this country to recover much of the sulphite waste liquor. It contains acid and lime compounds, both of which give trouble in the evaporators. It is well known that waste liquor can be fermented and ethyl alcohol distilled from it. Prof. McKee has proven that the liquor can be fermented even though it may contain some acid. His experiments proved that if air is bubbled through the liquor that the yeast plants will live and that fermentation will procede normally. However, the cost of commercial alcohol is against this method of production.

A more common use of waste liquor is to evaporate it somewhat and produce a tarry liquid which is used as a binder for foundry cores and in coal briquettes as an adhesive, and for dirt road treatment. Waste liquor comes on the market as Bindex, Lignone, etc. Some liquor is evaporated to dryness and sold in dry form. The main objection to recovery through evaporation is the steam costs of evaporating the large quantities of associated water.

Another recovery which is not followed in very many mills is that of SO_2 recovery from the gases blown from the digester. Throughout the country there is a tremendous waste of SO_2 and heat from every digester blown. To recover the gases requires large capacity equipment which remains idle between blows. The gas volumes to be handled are very large because of the short time in which the gas is running. At one mill they do pull these gases through a series of scrubber towers. In the first tower the gases come in contact with water. This water is put through slow enough to leave the tower and run to the sewer at a temperature of very nearly boiling, yet it cools the gases to a point where they can be absorbed in the intermediate acid with which they come in contact in the second tower. From here the gases could be vented to the air, but they may be drawn through still a third tower where they will give up practically all the remaining SO_2 to the weak acid with which they are scrubbed in this tower.

In the European system of sulphite practice they relieve their digesters down to atmospheric pressure and then wash the stock from the digesters to the blow pits, or rather wash pits, which are located directly beneath the digesters or at least at a lower level than digesters. Open stock pits are used and the stock is removed from the pits by means of a belt conveyor. This conveyor delivers the stock to a disintegrator and from here it goes through a regular knotter and screening system. Their claims are for a stronger, tougher fiber because of the absence of the shattering effect which we get when we blow our stock against the targets even at a pressure of 50 lbs. per square inch.

Having followed the stock through its digestion and subsequent disintegration and washing in the blow pits, we will in our next chapter take up the flow sheet at the entrance to the raw stock screen room where the selection takes place. We will try to cover various screening or separating devices. Here we will see where we are repeating the efforts which began in the wood room and we can see the relation between the wood room equipment and that of the brown stock screen room.

Cost Accounting in the Paper Industry

Part V—Standards of Operation and Consumption

By D. A. WILCOX
Oxford Paper Company, New York

HAVING set up the various departments or centers and having estimated their total expenses on a yearly basis, the next step is to arrive at the standards of operations for division into expenses, and obtain the rates. Even though an actual system is used in which actual expenses are divided by actual productions, both of these steps are of value for making comparisons and measuring the efficiency of the results.

There are several forms of units in which operation standards may be set up, as follows:

Hours of operations: machine hours, man hours.

Units of production: tons, reams, gallons, etc.

Units of capacity: digesters, tanks, etc.

Units of value: per dollar of labor, etc.

It depends upon circumstances as to which one should be used. In general it is best to select the one which is responsible for the principal variation in the expenses. For example, on the machines an hourly rate is best used because the expenses vary more with the number of hours the machine has run than with the tons produced. Similarly in a pulp mill the number of digesters blown is the better unit, while for wrapping rolls, where the principal items of expense are labor and wrapper, the weight wrapped is the better factor.

Often, especially in what is known as "Predetermined Costs," an hourly rate may be developed, but the rate applied to the costs of paper is on the basis of so much per ton, depending on the type made, the connection being that the time required to produce a ton is estimated and the rate applied is that time multiplied by the standard rate per hour. If the estimates are the same as the actual conditions, i.e., if it really takes just as long to produce a ton as was estimated, then the two will balance out. If, however, it takes more or less time to produce a ton than was estimated they will not balance and we shall have a "Variance". Frequently the estimate as to hourly production is set on the basis of what is desired rather than actual current conditions. In this case, variances are to be expected until the actual conditions have been brought up to the desired efficiencies and the standards act as a spur to greater efficiency.

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

Mr. Wilcox has been cost accountant for the Oxford Paper Company since 1920. He is a member of the New York Chapter of the National Association of Cost Accountants and of the Cost Association of the Paper Industry. He was graduated as a chemical engineer from Columbia University in 1913, and has had large experience in reorganization work and systematizing in various positions subsequently. Thus he was in the United States Government service during the war and organized and operated the Effects Bureau to handle the effects of soldiers dying in foreign lands.

Questions addressed to Mr. D. A. Wilcox in care of THE PAPER INDUSTRY will be forwarded to him at once.

Suggested Centers

The first thing to consider, therefore, is the type of unit, hours, operations or production that may best be used. The following are suggestive for several types of centers:

Wood yard: cord delivered to wood room.

Wood room: cords chipped.

Pulp mills: digesters blown.

(Note: The pulp mills may be subdivided into several centers, each having different units, as digesters, gallons of acid, tons of pulp bleached, etc.)

Beaters: machine hours.

Machines: machine hours.

Calenders: machine hours.

Rewinders: machine hours.

Cutters: machine hours.

Size and clay mixing: cwt. mixed.

Finishing cut paper: man hours.

Wrapping rolls: cwt. wrapped.

Finished paper storeroom, cwt. stored.

Shipping: cwt. shipped.

Repair dep't.: man hours.

Supply storeroom: per cent of value of issues.

Steam plant: tons or thousands of pounds of steam delivered.

Normal Standards

In previous articles mention has been made of normal standards. By this is meant the determination of the number of units to be considered as normal over a year. Upon this a great deal depends and it is a matter of policy which must be determined at the outset. Upon it depends what proportion of the expense will be charged to the product and what part will be charged off to profit and loss on account of idle time.

Unfortunately it is difficult to combine two factors of great importance—namely, control and approximate current costs. If the standards are set high for the purpose of control and to develop efficiency, the rates will be low (as the rates are the total estimated expenses divided by the total estimated units of operation) and hence the costs will be low; if the standards are set low to represent current practice, the rates will be higher, more cost will go to the product and less to unearned burden, but the standards will be no spur to efficiency. We are therefore faced with the dilemma of having to decide whether we shall set standards for efficiency and get costs that will be less that actual, or set them at average and lose part of our control over operations.

This resolves itself into the question as to which is of most importance—reducing costs or knowing accurately what the costs are. We cannot both have our cake and eat it.

Hypothetical

If we consider the purely hypothetical side of the question, we must admit that the proper cost to charge against the product and hence at which to build up the inventories is the strictly normal cost, i.e., the cost which would be attained with the mill operating under good normal conditions as regards expense and time. Any excess expenses or reduction of time would be a direct loss to profits and not a proper charge against the product and should be charged off as a loss arising from current operating conditions. ("Unearned Burden"). The standards to be set would not represent an extra good efficiency, nor current conditions as regards units of production, should the industry be in any sort of a slump. However, we have more than this at stake and what we really desire is a practical application which will be of the greatest benefit in reducing costs and giving us figures to show what we can safely set as selling prices.

In attempting to get around the difficulty there has been a somewhat common expedient used. The standards are set to represent efficient operation so far as matters of expense and degree of operations are concerned, but when it comes to set the rates, instead of merely dividing the one by the other, they are set arbitrarily, either higher or lower than the results of the division would work out. For example:

The standards of expense for a department add up to $1,000. The standard operating hours are 100. In each case the standards represent a high degree of efficiency, but it is not expected that they will actually be met. It is thought that the expenses will probably be higher and the hours operated lower. Thus, instead of a rate of $10.00 being used the rate is set arbitrarily at $13.33.

The principal objection to this method is that it is arbitrary. The estimates are made with considerable care, and then a rate is set that is more or less a matter of guesswork. Furthermore, it is always disconcerting to find that the rates do not check mathematically with the estimates. Of course the amount charged off as unearned burden will not equal the number of hours lost times the rate, and the amount charged to the product will be at a higher rate per hour that that charged off for lost time. This is easily explained by the fact that the unearned burden is arrived at by difference. After the amount to be charged to the product has been determined by multiplying the hours used times the arbitrary rate, the sum so secured is deducted from the total estimated burden and the balance considered unearned. Therefore, the rate per hour charged for unearned burden is not the same as that charged for earned burden and varies continually according to the number of hours earned.

Combining Theory and Practice

The following is, therefore, suggested as a possible procedure. So far as the writer knows it has never been tried out in actual practice and with this word of caution it is advanced for what it may be worth. Basically it first sets standards for efficient operation, then inflates the total, as will be explained, and gives a rate which will represent actual practice, but retains the standards for comparison.

Let us set the standards for each item of expense entering into a center at as high a degree of efficiency as we desire so that they will be real standards of accomplishment, and then let us set opposite them what we really expect the actual expenses will be. In each case we can then secure the difference between the two and set the total of these differences as a final sum to be termed anything we desire, to inflate the standard total as follows:

Item	Standard	Expected	Difference
Fixed charges	$100.00	$100.00	.....
Labor	200.00	250.00	$50.00
Supplies	100.00	125.00	25.00
Steam	300.00	330.00	30.00
Gen. Mfg.	100.00	100.00	.....
Repairs	150.00	200.00	50.00
	$950.00	$1,105.00	$155.00

Now the standard number of hours, we shall say, is 100, but we only expect 90. The actual rate then should be $1,105.00 divided by 90 or $12.27 an hour. We shall, therefore, have to add still another amount to the difference so that when the total is divided by the estimated number of hours (100) the rate will be $12.27. Working backwards we get:

100x12.27 equals	$1,227.00
Less standard expenses	950.00
To be added	$ 277.00

Of this, $155.00 represents expected excess expenses and the difference, $122.00, a balancing figure to represent expected lost time.

The expenses would be listed as usual and in addition would have at the end this balancing figure. The nature of this need not be disclosed to the mill foremen. As a matter of fact they are not interested in it at all. All that concerns them are those things which are under their direct control, as supplies, labor and repairs, and they are concerned only with how nearly they come to the standards set up for them. By such a device it would be possible to have standards set up for efficiency and against which might be set the actual results to show the foremen, and at the same time have rates that would give a cost more nearly in line with actual current conditions. It would be mathematically correct and would at least have the advantage that the amounts charged to the costs and to the unearned burden would be at the same rates per hour, if that is any virtue.

Practical Units of Operation

A word of caution must be added as regards the foregoing, particularly pertaining to the number of units of operations to be used. In each case consideration must be given as to what are the practical units of operations. Take the case of the paper machines. It is practicable to run them twenty-four hours a day, less necessary time down to change wires, make repairs, etc. It may be proved that they have actually averaged, say twenty-two hours a day. In the above case twenty-three hours may be set as the standard and twenty-two as the expected, to get the rate.

When we come to the other centers, however, conditions are different. We may have a center, such as the calenders, which is designed to take any peak load that orders may call for. Obviously it is overcapacitated for ordinary operations and usually will only run at, say, 60 per cent of normal capacity. The question then arise as to what we should use. If, for example, the mill is equipped with ten calenders for each of which twenty-three hours a day may be considered normal, but ordinarily only six of them run, shall we use 6x23x310 days as a standard for normal hours per year or shall we use 10x 23x310? The effect in the first instance is to make the cost of calendering on the regular runs of paper high, but it absorbs all the burden of the department. In the latter case calendering cost will be low and there will be an almost regular charge-off on account of idle time. It is admitted that if the orders were received, the ten calenders would run and the calendering costs be lowered correspondingly, hence if the higher rate be used, the mills calendering cost will be high to its disadvantage in setting prices as compared with a competitor who has no such excess calender capacity.

I am convinced that the rate should be set on the basis of the ten calenders. If this is true of the calenders it will be true also of the other finishing departments. The finishing departments may be unbalanced in any event, so that a considerable amount of unearned burden may be loked for there. But the costs will reflect for each type of paper what they would be if orders enough for that type were received. The appearance of this unearned burden will be a constant reminder to the management that this overcapacity exists and should be of particular value when the question of adding new equipment arises.

Handling Excess Capacity

If it be true that overcapacity is present in such great excess that in no cirmcumstances could enough rough paper be made to fill the particular department in question, then another element enters and the standards should be set at an amount no greater than would be required to process all the rough paper that could be made. In the case of cutters, for instance, sometimes machines are so plentiful that by running three shifts they could cut 150 per cent of all the rough paper that could be made and in this case, either sufficient hours should be set to enable them to cut 100 per cent of the rough paper (two shifts in this case), or, perhaps some of the cutters should be considered as "Unused Space and Equipment" and the fixed charges on them charged off directly to profit and loss and full time calculated for the rest.

The whole value is a matter of common sense. We should endeavor to get a cost that will not put us at a disadvantage with our competitors for a certain operation, but at the same time there is no use in figuring on the impossible.

Under such a condition we must expect some unearned burden, i.e., idle time charged off. Obviously this must be allowed for in setting the final cost and determining the selling price or we would not get in return enough to make all expenses and still make a profit. After securing the mill cost it is well, therefore, to add an additional amount—usually a fixed rate per pound for all papers—to take this up before arriving at the total cost. If great refinements are desired, then the calendered papers can receive a rate for the estimated unearned burden of the calenders; the cut papers one for the unearned burden of the cutters, etc., but usually a flat rate per pound is close enough. By adding a special rate for calendered papers and one for cut papers, we get right back in this way to the place where we would be if the rates had been set higher in the first place. It is true that in a specialty mill where the finishing department is over-capacitated, the costs will be higher than in a perfectly balanced mill, and it seems only fair that this is an item that should be born pro-rata by all the products, which is the case

when an even charge is spread over the entire product. Estimates as to what unearned burden will be, are necessarily hypothetical and such a refinement would exceed the accuracy of the original premises.

Rates During Industrial Depression

One more aspect must be considered before leaving this question. What shall we do in the case of a major operation—the neck of the bottle, as a paper machine or the machine room as a whole—when it is fairly obvious that owing to conditions in the industry as a whole, there is little likelihood of the mill running 100 per cent all year? Such a situation prevails today in the newsprint industry. Shall we take 100 per cent mill operation as the standard and figure unearned burden on the full amount of the shutdown? Theoretically, Yes; but practically, and as a means of securing control of the costs, No. It is my conviction that this would accomplish no practical good.

About the most difficult thing to do with a month's statements when there has been any considerable amount of idle time is to figure out how efficient the expenditures were while the mill was running. In such a case expenses will almost always fall below the standards and yet such a condition was to be expected. How to figure out the amount to allow for reduction in expenses during the shut-down and what the expenses should have been while the mill was in operation is a most puzzling problem. It does no practical good to aggravate the situation by figuring on 100 per cent operations when it is known in advance that they will not be attained. It is far better to reduce the standards to a reasonable point, not using 310 days but 300 days or whatever basis may seem most practicable and set the standards on that basis. Using the reports of the industry and the best judgment available, a percentage of a whole year should be calculated which it is expected will represent the operations for the industry for the coming year, and this percentage of a whole year used. In any event, the full normal hours per day for each and every day it is expected to run, should be used and the time-down figures in whole numbers of days.

Thus if the industry as a whole were normally operating at 80 per cent capacity and the mill had four machines, each capable of operating at twenty-three hours a day, it would be best to use 4x23x(310x .80) as the annual number of operating hours as a basis of figuring labor, supplies and operations. It would appear in such an event that a safer cost could be secured for setting selling prices, and better control would be secured over operating conditions than if 310 days were used. In any event, Care must be taken that the degree of reduction is **representative of the industry as a whole and not peculiar to the particular mill.** If the business is there to get, but the sales force is unable to produce, that is true unearned burden; but if the business is not there and the sales force get their fair share, then the loss cannot be said to be in the same class.

Temperature of Bleaching vs. Strength of Fiber

By WILFRED V. TORREY

Asst. Chemist, S. D. Warren Co. and Member of T. A. P. P. I.

THIS investigation was conducted as a study of the effect of the temperature of bleaching upon the strength of fibers. Various authorities have advanced opinions concerning the maximum temperature at which fibers should be bleached but the experiments upon which their conclusions were based, related to the bleach consumption or to the color of the bleached pulps. There appears to have been little research work done regarding the relation of bleaching temperature to strength of fibers, heretofore.

Experimental Procedure

A sample of soda poplar and samples of two lots of sulphite spruce pulps (from different manufacturers) were prepared and the determinations of their bleachibility were made. The method follows:

50 gram samples of the air-dry fiber were weighed and the moisture content determined in order that the actual weight of air-dry fiber at 10 per cent moisture might be calculated. These samples were soaked in water and disintegrated by rubbing with the hands and then diluted to about 3 liters in 6″x 8″ battery jars. The jars of pulp were placed in an electrically heated water bath, the temperature of which was controlled by a thermostat. The apparatus was provided with a power-driven agitator for each jar—capacity 4 jars.

The thermostat was set at the required temperature, the bleach solution added to the slush fiber samples and the agitators started.

The apparatus needed no further attention for several hours. Then the samples were tested at frequent intervals with starch and potassium iodide indicator solution. The end point was the degree of exhaustion of the bleach, at which it took several seconds for the characteristic blue color to develop when the starch iodide indicator was added to the pulp.

The bleached fiber was poured into a 70 mesh screen and carefully washed with a heavy stream of water in order to free the fiber from bleach residues. The bleached and washed fiber was made into sheets on a laboratory sheet machine and dried on a small steam dryer. The finished sheets could then be compared with standard color sheets (of bleached fiber). Retests of the bleachibility must be made if the color produced by the first bleaching test does not match standard closely enough.

After determining the amount of bleach necessary to produce the standard color, 100 gram samples of the three lots of fiber were bleached in the manner described in the foregoing paragraphs, at temperatures from 25° to 50° c. The bleached samples were washed, made into sheets, the sheets allowed to air dry and then subject to standard beating tests.

Beating Tests—The beating tests were made in the following manner:

A 50 gram sample of air-dry fiber was disintegrated in water, transferred to a small pebble mill and the total volume of water brought up to 2000 cc. The mill was closed and run for 60 minutes. The beaten pulp was washed into a calibrated pan and diluted to standard volume with water. An aliquot of the diluted pulp was poured into the sheet machine for each sheet. Four sheets were made, the sheets were couched off the machine on pieces of felt. The pile of sheets and felts was placed between two pieces of sheet iron and the whole placed in a small hydraulic press. The press was held at a 300 pound gauge pressure per square inch for a period of 30 seconds. The sheets of fiber were removed, placed on racks and allowed to dry at room temperature.

The sheet machine and hydraulic press were practically the same as those described in detail in the Paper Trade Journal of April 22, 1926 in the "Method for Determining the Strength of Sulfite" by R. N. Miller.

The four air-dry sheets of beaten fiber were cut across diagonally, and five tests were made on one half of each sheet (making a total of twenty tests on each lot) with the Ashcroft tester. The results given herewith were the averages of the twenty tests on each sample lot. Strips 2.5 inches wide were cut from the half sheets not needed for the bursting test, and the four strips together were subjected to the tearing test in the Elmendorf tester.

The results of the strength tests of the bleached and beaten fibers are given in the following tabulation and in the chart which accompanies this paper.

Temp. of Blea. Bath oC	Bursting Test Soda	A Sul.	B Sul.	Tearing Test Soda	A Sul.	B Sul.
25	45.2	66.2	44.4	23.2	42.5	47.0
30	38.9	62.4	44.6	20.0	36.2	48.7
33	39.7	....	37.9	21.2	....	52.0
35	....	63.1	....	....	39.0	....
40	....	57.3	....	23.7	41.2	....
45	44.8	....	33.9	....	....	58.5
50	40.4	61.2	34.3	25.7	40.0	49.5

Summary

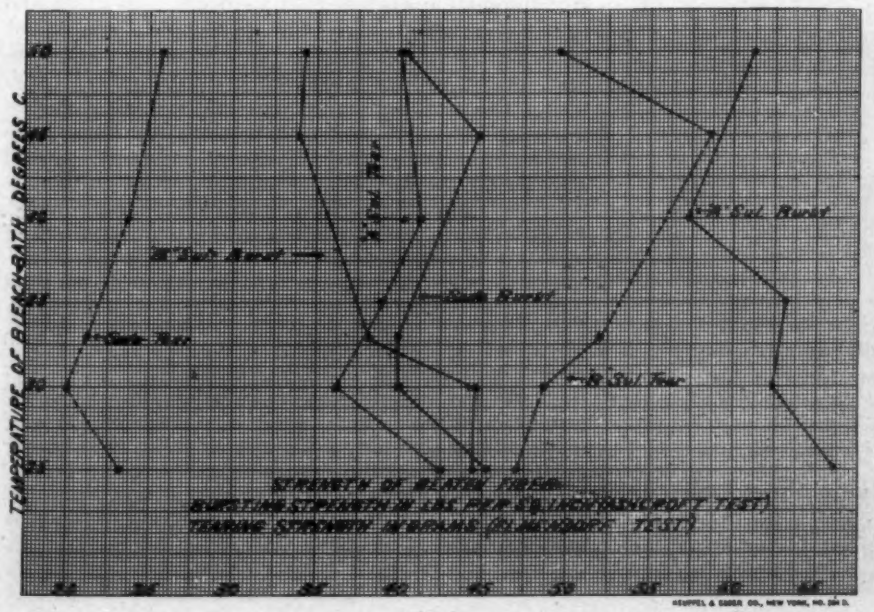
Bursting Strength—These results showed that there was a very slight reduction in the bursting strength of each lot fiber as the bleaching temperature was increased.

Tearing Strength—The A sulphite showed a very slight decrease in strength while the soda and B sulphite showed tendency toward a slight increase in strength with the increase in temperature of the bleach bath.

The differences were all so slight that it must be concluded that varying the temperature of bleaching from 25° to 50° (77-122° Fahrs.) has practically no effect upon the bursting and tearing strength of the bleached fiber.

Train the Foreman to Think

The foreman is one of the key men in an organization. After having worked up through the ranks he has often lacked the opportunity to secure the correct training to develop executive qualities. The establishment of conferences for foremen under the direction of a superintendent of industrial relations, has developed for the New Orleans Public Service, Inc., an analytical supervisory force—its foremen. Herbert B. Flowers, president of that company, in writing for the Executives Service Bulletin on "Foreman Training and Accident Prevention" cites the advantage of training the foreman to think. "Participation in the discussion of the various topics forces the men to study their jobs from all angles. It breaks them of the bad habit of jumping at conclusions without having all the facts in the case on which to base their conclusions. They are brought to a realization of the fact that there are always at least two sides to every story, and that a study of both is essential in making an intelligent decision.



Current Thought by William Sibley

How Best to Inaugurate a Suggestion System

LAST month, in this place, I set forth the purposes of an industrial suggestion system and about what such a system, properly installed and carried forward, might be expected to do. Quoting further from my book on suggestion systems, the copyright on which is now owned by Morton, I wish this month to advance a few thoughts concerning the best ways in which to inaugurate a suggestion system.

Although many different methods are employed, analysis shows that essentially there are but two plans for operating suggestion systems now in general practice. One is to limit the operation of the system to periodic contests, during which time suggestions on particular subjects are solicited and the suggestion idea aggressively pushed. The other is to have the suggestion system operative throughout the year with a schedule of awards rising for possible payment at regular, stated intervals.

Experience has shown the latter plan to be much the better, except perhaps where the firm is relatively small and the number of employees few. For a fair sized firm or larger, (50 employees or more) to operate a suggestion system under the contest plan, there is in addition to the disadvantages inherent in any spasmodic effort, the liability of receiving a large number of inferior grade if not worthless suggestions. These require time and attention for disposal, both of which cost money, and frequently result in disgruntled, dissatisfied workmen. Then, too, the contest plan makes the payment of awards impossible until every case has been cleared—a delay that is often resented and misunderstood.

Suggestion systems are similar to any other phase of industrial relations or plan for the betterment of methods or product, in that they must have careful planning, constant supervision, and continuity of effort if they are to give maximum benefit.

What is to Be the Basic Purpose?

Before launching a suggestion system it is imperative that there be a clear conception of what is to be accomplished by that system. Will it be restricted to certain subjects such as invention, safety, and methods, or will it be made to apply to every phase of manufacturing or institutional activity? Because everything must be circumscribed and kept within due bounds, just what will be the limitations to the proposed system, regardless of its breadth of application? In short—define the purpose of the plan.

Who of those engaged will be eligible to make suggestions? Ordinarily, executives, employees on development or experimental work, and those appointed to membership on the suggestion committee, are not eligible to awards. Foremen and department heads should be eligible to awards, providing their suggestions pertain to matters outside their own departments. If, however, in your individual case, there are to be exceptions to this common practice, such exceptions must be clearly defined and understood.

Naturally, the prime essential to the success of any suggestion system is the sincere conviction and full co-operation of every executive, department head and foreman. It must be obvious that to succeed, every system should have the voluntary backing of the entire management and a willingness on the part of every executive to work for its success and continued operation. The most carefully planned suggestion system will inevitably fail if only half-hearted support is given it by the managament. Those systems which have been built up slowly and on solid foundation are giving the best results.

Not a few department heads and foremen feel that suggestions coming from the men under them are in themselves reflections on their foremanship or administration. Where such erroneous convictions are allowed to remain, even in a single case, the proper, profitable functioning of the system will be most effectually blocked. Not always does antagonism or detrimental undercurrent become visible or noticeable untitl after the system has been put into operation. Methods for overcoming such a difficulty are, however, apart from methods of inauguration.

Appointing the Committee

Once the basic purpose for your system has been settled, the management completely sold on the whole proposition, and the eligibility of employees determined, the Suggestion Committee can be appointed.

Just who is to be appointed to make up this committee is more or less optional with each individual company. Such a committee, however, should consist of at least five but not more than eight or nine men. Five is set as the minimum since that number will bring to the discussions expert knowledge of every plant condition, while eight is set as the maximum because larger bodies of men will likely prove unwieldy. Even though on particular occasions one or two of the committee members should be away on business at the time committee meetings are scheduled, enough will be left out of the original five to properly dispose of suggestions and awards.

As might be assumed, the Suggestion Committee should be headed, wherever possible, by the president or controlling executive of the company. Not only will there arise suggestions that will demand his attention and consideration, but the psychological effect on the men of having the president on the committee will be most favorable. Other members should include the general manager, chief engineer or superintendent, and those familiar with company policy in management, production and distribution.

Here and there instances have been found where companies have abandoned the use of suggestion committees on the grounds that they were too slow and cumbersome, substituting therefor a single man, such as the general manager or production manager. who alone functioned as the committee. In general practice, however, the committee of five or six men will be found the most beneficial to all concerned.

Schedule of Awards

While large financial rewards are in themselves not the sole incentive required to stimulate suggestions, it is absolutely essential to the lasting success of any suggestion system that the employees feel themselves fairly treated and that benefit received is proportionate to that gained by the company. For a man to make a suggestion, have it accepted and rewarded with a check for a dollar or two might conceivably be all right for very minor suggestions. But let an award of $2 or $5 be made for a suggestion that obviously benefits the company an appreciable amount, and cynicism, undercover resentment and the speedy death of the entire system will result. According to an article appearing in "Industry Illustrated":

"One of the reasons why so many suggestion plans have failed is because those who make suggestions or offer ideas which have been accepted and put into practice have felt that they have been inadequately rewarded.

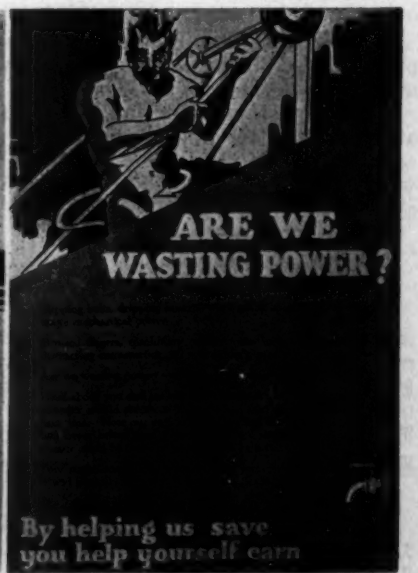
"Some concerns, for example, give a dollar for each accepted suggestion. The employee naturally feels that he should be recompensed somewhat in proportion to the actual value of his suggestion. If it saves the company a great deal of money he feels that this should be taken into account in determining the award.

"Every progressive manager should be willing to invest money in ideas which will save money. If he can get an idea for $500 that will save his company $5,000 it is as good an investment as purchasing a machine for $500 which will cut the cost of production $5,000. The difficulty has been that many firms seem to fail utterly in actually measuring the results of ideas submitted and applied."

Recommended Practice

By far the most universal practice among institutions now successfully using suggestion systems is the fixing of a minimum award (usually $5) to be paid for every accepted suggestion, then permitting the final award to be determined by an analysis

Are we in danger of fire ?
Bad fires often result in lay-offs, which are costly both to workers and management . . . . Are we flirting with fire?
Please describe any danger points



of cost records. Just as a cost system will indicate a weak department and the lines in which suggestions are needed, so will it aid in equitably determining the value of an idea or suggestion to the company. Fully 70 per cent of the companies now operating suggestion systems estimate the savings possible through suggestions and fix the award to the suggestor in accordance therewith. Such procedure uually calls for the immediate payment of the minimum $5 upon acceptance, then a monthly distribution of awards after the value of the suggestion has been estimated by the cost system.

The most satisfactory method for rewarding suggestors, therefore, is to set up a minimum award. ($3 to $5) estimate the actual cost value of the suggestions by cost records or expert judgment, then to scale the awards accordingly. More and more is this plan being adopted and the system of stated prizes being abandoned.

Not all suggestions, of course, can be reduced to monetary values. A suggestion for the improvement of industrial relations, for instance, may be ever so valuable to the company yet utterly without the bounds of financial calculation. Arbitrary awards must be set up therefore, and these can frequently take the form of medals, certificates, banners for departments, a three-day vacation on full pay, a promotion, or the assignment of additiona responsibility that carries with it increased compensation.

As examples of how awards are being arrived at by companies known to have been successful with suggestion systems over a period of years, we cite the following:

The Eastman Kodak Company rewards suggestions strictly according to their worth. The amount of the reward is determined, wherever possible, by the amount of saving effected, or its value in increasing sales.

Yawman and Erbe Company pays 10 per cent of the first year's saving effected through the suggestion, unless of course, the idea is of a very specific nature, in which event a special award is made rather than have a patent taken out with continuous royalty payments as the result. Minor suggestions bring awards ranging from $1 to $5.

Consolidated Gas, Electric Light and Power Company offered during 1926 the following schedule of awards:

For suggestions effecting a reduction in net operating costs, after due allowance for capital or other costs, of—

Value to Company	Awards
$5,000 or over, per year	$250
1,200 to $5,000 per year	100
500 to 1,200 per year	50
100 to 500 per year	25

Mead Pulp and Paper Company have a slightly more involved schedule of awards, the amount of the maximum being determined by the value of the suggestion to the company, in all classes except those applying to accident hazards or "conveniences." Their schedule, as printed at the top of their suggestion blank is:

Prize Awards

	Minimum	Maximum
1. Improvement in product	$5	None
2. Reduction in costs	5	None
3. Improvement in methods or machinery	5	None
4. Reduction of accident or fire hazards	2	$10
5. Conveniences	1	5

Under this schedule a suggestion calling for the repair of treads on a stairway would fall into the class of either No. 4 or No. 5 and be rewarded accordingly; whereas a suggestion effecting some established practice or manufacturing method would naturally be subjected to analysis by cost records for the determination of the proper reward.

Bird and Son, Inc., have had a suggestion system in continuous operation since 1912, during which time, naturally, there have been several changes and improvements made to it. Their system of awards, however, has remained substantially without change. A five-year record of performance for their system is given below, in which should be noted that the number of suggestions made, together with the percentage accepted and the worthiness of the ideas has increased more rapidly than the pay-roll. Nothing could be more indicative of good health in a suggestion system.

Year	No. of Suggestions Considered	Accepted	Amount Paid	Average No. of Employees
1922	420	87	$ 780	1478
1923	385	96	785	1596
1924	538	134	1270	1680
1925	552	163	1545	1728
1926	897	271	1970	1750

As for the giving of non-financial awards, several companies have been successful in giving engraved certificates, medals, watches, rings, watch fobs, or in the event the suggestion has to do with safety or some factor of operation interesting to the workman's wife and family, an object for the home such as a mantle clock, floor lamp, radio set, etc. In nearly every instance the giving of such non-financial rewards is staged at the time of some company function such as a dance, musical program, picnic, or other gathering.

Forms to be Used

The detail or "paper" work connected with a suggestion system should be kept simple and elementary. Naturally the amount of such work, and indeed, the plan of procedure, will vary with the type and size of organizations. Because all forms are entirely interdepartmental, it is not at all necessary that they be expensively made up. Indeed, all forms needed including the suggestion blank, may be reproduced on a mimeograph or multigraph, and on either blank paper or regular letterheads.

For nearly all companies the only forms needed will be the standard suggestion blanks, envelopes for their transmittal (should secrecy be advisable), form letter for their acknowledgment, and four ordinary folders for the handling and retention of the suggestions in the office.

The clerical work for such concerns involves merely, the regular collection of suggestions from the suggestion box, the insertion of these suggestions into a "Suggestions Received" folder until the next scheduled meeting of the Suggestion Committee, at which time disposition is made of the ideas with subsequent filing of the suggestions into one of the three remaining folders: "Adopted Suggestions," "Rejected Suggestions," or "Pending Suggestions."

Next month I will endeavor to tell you how best to operate a suggestion system.

The Paper Industry 1929 Safety Contest

March Scores

33 Mills Have "No Accident Month"

PERFECT SCORES

	PARTICIPANT	MILL	LOCATION
GROUP A	Kimberly-Clark Corp.	Falls	Niagara Falls, N.Y.
	Nekoosa-Edwards Paper Co.	Port Edwards	Wisconsin
	International Paper Co.	Niagara Falls	New York
GROUP B	Warren Mfg. Co.	Milford	New Jersey
	International Paper Co.	Piercefield	New York
	Falls Mfg. Co.	Oconto Falls	Wisconsin
	Kimberly-Clark Corp.	Badger-Globe	Neenah, Wis.
	Great Western Paper Co.	Ladysmith	Wisconsin
	Defiance Paper Co.	Nos. 1 & 2	Niagara Falls, N. Y.
GROUP C	International Paper Co.	Montague	Turner Falls, Mass.
	American Writing Paper Co.	Linden	Holyoke, Mass.
	American Writing Paper Co.	Parsons	Holyoke, Mass.
	Port Huron Sulphite & Paper Co.	No. 1	Port Huron, Mich.
	Marinette & Menominee Paper Co.	Menominee	Michigan
	American Writing Paper Co.	Nonotuck	Holyoke, Mass.
	International Paper Co.	Webster	Orono, Me.
	Kimberly-Clark Corp.	Atlas	Appleton, Wis.
	Mead Pulp & Paper Co.	Peerless	Dayton, O.
	Upson Company	Board	Lockport, N.Y.
	American Writing Paper Co.	Mt. Tom	Holyoke, Mass.
	Union Bag & Paper Corp.	Allen	Hudson Falls, N.Y.
	International Paper Co.	Winnipiseogee	Franklin, N.H.
	Gardner & Harvey Co.	No. 3	Middleton, O.
	Warren Mfg. Co.	Hughesville	Riegelsville, N.J.
	International Paper Co.	Livermore Falls	Maine
	American Writing Paper Co.	Platner-Porter	Holyoke, Mass.
	United States Gypsum Co.	N. Kansas City	Missouri
	Kimberly-Clark Corp.	Neenah	Wisconsin
	Lincoln P. & P. Co.	Lincoln	Merritton, Ont., Can.
	Diamond State Fibre Co.	Bridgeport	Pennsylvania
	United States Gypsum Co.	Gypsum	Ohio
	United States Gypsum Co.	Lancaster	Ohio
	International Paper Co.	Riley	Maine

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
KEY	Rank	Credit	Debit	KEY	Rank	Credit	Debit	KEY	Rank	Credit	Debit
A- 9	4	473.935		B-14	7	398.665		C-32	25	269.465	
A-21	5	471.750		B- 6	8	379.250		C-21	26	213.450	
A- 8	6	449.685		B- 9	9	356.815		C- 4	27	150.135	
A-28	7	448.550		B-17	10	338.765		C-13	28	70.465	
A-29	8	446.015		B- 4	11	316.465		C-46	29	26.085	
A- 3	9	414.185		B-16	12	309.935		C-12	30	17.865	
A-17	10	412.765		B-10	13	298.600		C-16	31	14.950	
A-14	11	396.635		B-30	14	297.600		C-35	32	5.765	
A- 4	12	366.950		B-18	15	235.200		C-24	33		87.715
A-25	13	354.615		B-31	16	221.985		C-37	34		103.165
A-23	14	318.150		B-12	17	201.585		C-34	35		130.450
A-16	15	289.385		B-25	18	183.115		C-20	36		231.185
A-12	16	270.035		B-11	19	86.135		C-45	37		271.535
A-20	17	205.765		B-26	20	84.135		C- 6	38		432.785
A-26	18	175.650		B- 1	21		58.035	C-28	39		439.585
A- 7	19	155.350		B-21	22		144.715	C- 3	40		720.765
A-24	20	37.285		B-23	23		185.115	C-22	41		808.465
A-10	21	5.650		B-24	24		202.350	C-54	42		818.300
A-27	22		194.735	B-33	25		255.600	C-50	43		835.635
A- 1	23		297.585	B-28	26		308.785	C- 5	44		841.815
A- 6	24		544.215	B-27	27		318.900	C-47	45		1050.785
A-22	25		559.015	B- 3	28		480.885	C-58	46		1183.485
A-13	26		1131.465	B-29	29		525.985	C-15	47		1188.885
				B- 7	30		576.565	C- 7	48		1250.765
				B-34	31		807.685	C- 1	49		1271.785
				B-22	32		1038.185	C-41	50		1432.735
								C-42	51		1876.400
								C-10	52		1948.715
								C-51	53		2683.115

Reports Outstanding:
A-2, A-5, A-15
B-2, B-5, B-13, B-32
C-8, C-17, C-18, C-19, C-39

Tune in on the "Universal Safety Series"

Charles M. Schwab—In opening the series April 20, Mr. Schwab spoke not of industrial achievement, but rather of the economic system which prevails in American industry and the relative benefit to industry of contented, happy workers. Answering his own question, "What is safety work?", he gave the following quotation from an address delivered before a gathering of steel men by the Rev. John McDowell: "To save life is the noblest of all purposes. It embodies the highest ideal of humanity. It conserves the best asset of the nation; provides its best protection; and creates its real glory. It incarnates the spirit of democracy and brotherhood".

Albert W. Whitney—On the evening of April 27, Mr. Whitney, who is associate general manager, National Bureau of Casualty & Surety Underwriters, inspired his listeners and accelerated the interest in the series. Refuting the time-worn phrase that "Accidents will happen", the speaker pointd out that this statement is altogether false; that the only kind of accidents which need to happen are those from natural causes over which man has no control. Statements have even been made that a safe world would be void of adventure and thrills, and in contrast Mr. Whitney cited the example of Lindberg and Byrd, who lead highly adventurous lives, yet are safe in the highest sense. A safe world is the more truly adventurous world. Safety teaches one to meet adventures successfully. There is no thrill in failure.

P. E. Crowley—The president of the New York Central Lines spoke on the evening of May 4 and gave an interesting explanation of the work his company is doing and the large amount of money being expended to insure the safety of the public. He convincingly pointed out their alertness to safeguard even the mistakes of travelers and motorists. A group of employees of the Chicago Tunnel Company listened to Mr. Crowley's address while at work fifty feet underground below State Street in Chicago. The radio had just been installed, and the reception of this address, the first to be tuned in was very good.

These safety talks will be given each Saturday evening up to and including July 13, as announced in last month's issue of THE PAPER INDUSTRY.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of March 31, 1929

PARTICIPANT	MILL	RATE	PARTICIPANT	MILL	RATE
Kimberly-Clark Corp.	Neenah	0	Bergstrom Paper Co.	Neenah	.33
International Paper Co.	Riley	0	Union Bag & Paper Corp.	No. 5	.35
U. S. Gypsum Co.	Gypsum	.003	Gardner & Harvey Co.	No. 1	.40
International Paper Co.	Webster	.13	Kimberly-Clark Corp.	Atlas	.46
Upson Company	Board	.14	Lincoln Pulp & Paper Co.	Lybster	.50
Gardner & Harvey Co.	No. 3	.14	Union Bag & Paper Corp.	Allen	.59
Adams Bag Co.	Chagrin Falls	.17	Lincoln Pulp & Paper Co	Lincoln	.84
International Paper Co.	Winnipiseogee	.29	Union Bag & Paper Corp.	Fenimore	1.66
Gardner & Harvey Co.	No. 2	.31	Northwest Paper Co.	Brainerd	1.94
			Lincoln Pulp & Paper Co.	Sulphite	2.25

Group A- Nekoosa-Edwards Paper Co., Combined Mills .47

International Paper Co., Niagara Falls .40

Recent Boiler Practice in Germany

Featuring Representative Types Exclusive of Those of the Latest High Pressures

THE present state of boiler construction in Germany is described by F. Weber and A. Koneyung in the Archiv fuer Waermewirtschaft und Dampfkesselwesen (1929) 10, 3, pp. 79-88. The data given concerning a number of German boiler designs is of special interest. According to the authors, Wilhelm Schmidt is recognized as the pathfinder in the application of superheating and of high pressures. Before the cooling grates and the water-cooled side walls for powdered coal fired furnaces became known, the suggestion was made in Germany to provide the enclosing walls of grate fired furnaces with water tubes which were connected to the water circulating system of the boiler. In 1885, a German firm had solved in simple manner the problem of utilizing to a wide extent the radiation heat of the water tube boiler. An interiorily fired water tube boiler which was designed in 1910 could be considered as a modern radiation boiler, though the high combustion chamber was absent, which came with the introduction of powdered coal firing. The promised advantages arising with the advent of powdered fuel firing, such as use of low grade fuels, highly preheated combustion air with increased output, easy and flexible control, utilization of flue gases without use of economizers, etc., led to the installation of this system in the German central stations until today there are powdered fuel fired boilers with water contact heating surfaces of as much as 25,800 sq. ft. in service.

The specific steam output of the boiler of 1918 of 20 to 25 kg. per sq. m. (4 to 5 lb. per sq. ft.) per hour has more than doubled. The temperatures have increased to 887° Fahr., higher temperatures still causing difficulties in expansion due to heat and transmission of steam. Of the water tube boilers ordered for use in Germany in 1927, 70 per cent were for operating pressure below 367 lb., and of the remaining 30 per cent only 1½ per cent for pressures above 660 lb.; preferred were the operating pressure ranges from 206 to 235, 294 to 323, and 484 to 558 lb. The preferred sizes for vertical tube and inclined tube boilers built during the last five years were of 4,300 to 6,450 sq. ft. water contact surface. The average size of the water tube boiler for use in Germany in 1927 was 4,682 sq. ft., whereas in the United States it was 5,005 sq. ft., and a few boilers are considerably larger than the largest German boilers.

In point of firing systems, the traveling grate for pit coal is leading, for in 1927 45 per cent of the water tube boilers ordered, based on heating surface, were equipped with traveling grates for pit coal, 27 per cent with stair step grates for brown coal, 16 per cent for powdered coal firing, waste heat firing, etc. The powdered fuel firing systems have suffered a decrease due to the recent developments in traveling grates for large boilers, which assure besides other advantages at least equality with powdered fuel firing systems and with the stokers in respect to controllability, and they are lower in first cost and maintenance.

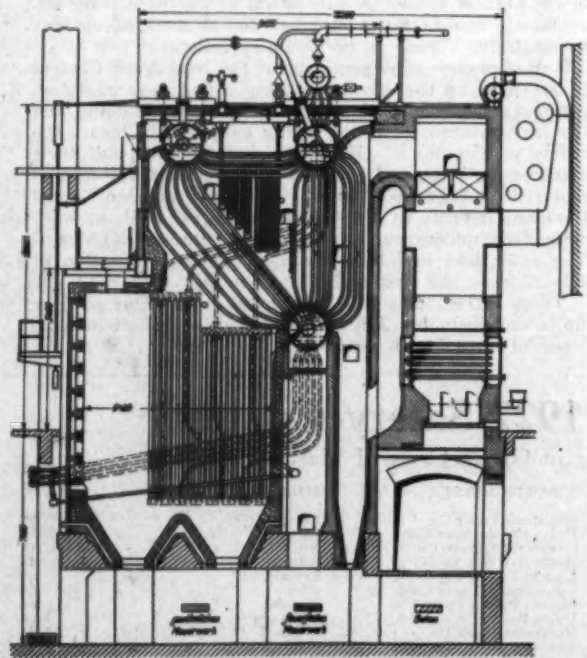


Fig. 1—Vertical tube boiler for powdered coal firing; 800 sq. ft.; 514 lb. gauge

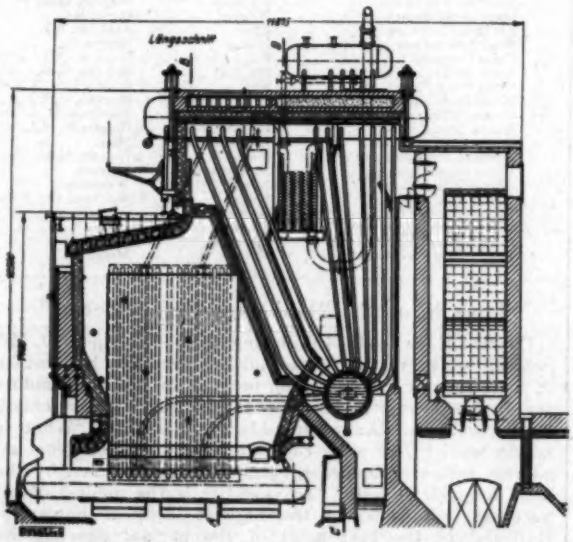


Fig. 2—Vertical tube boiler with traveling grate and supplementary powdered coal firing; 3,500 sq. ft.; 514 lb. gauge

The cost of erection of a modern boiler plant amounts to 15 per cent of the cost of the boiler, superheater, furnace and preheater. The vertical tube boiler and the inclined tube boiler are used in nearly equal proportions. Of late years the triple drum vertical tube boiler with bent tubes of the type shown in Fig. 1 has been used in Germany for the higher pressures and the greater heating surfaces, in preference to the vertical tube Garbe boiler used extensively for pressures to 367 lb. Fig. 2 shows a special design of vertical tube boiler in which a traveling grate with supplementary powdered coal firing is used. The side walls of the combustion chamber are fitted with heating surfaces.

Similarly as the straight tube vertical tube boiler, so the double chamber inclined tube boiler is built only for the lower pressures to 440 lb., whereas the sectional chamber boiler has become more important, for this type especially in the design of one or two crosswise-placed upper drums has proved satisfactory for large boilers. The largest boiler of this type built in Germany has 25,833 sq. ft. of water contact heating surface and powdered coal firing, operating with 382 lb. pressure, using superheater of 8,073 sq. ft. surface and tubular air preheater of 32,292 sq. ft. surface. Large

boilers of the triple drum type have been equipped also with direct or unit powdered fuel firing systems, whereas thus far a central pulverizing plant had been preferred for reasons of safety.

The sectional chamber boiler for 323 lb. shown in Fig.

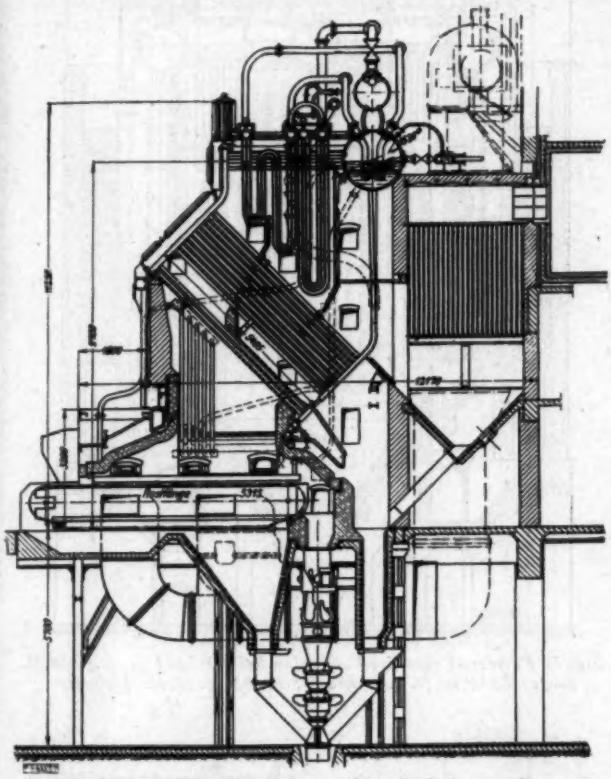


Fig. 3—Sectional chamber boiler with underdraft traveling grate; 10,764 sq. ft.; 323 lb. gauge

3 operating in a southern German peak load power plant, is equipped with a traveling grate with underdraft of 435 sq. ft. usable grate surface. The flue gases of the boiler are used only for preheating the combustion air and not for preheating the feed water. Of interest here is also the slag stripper, the superheated steam temperature regulator, the switching equipment and the arrangement of the superheater, the cooling beams in the side walls above the grates which are hooked up to the water circulating system, the cooling tubes in the combustion chamber, the steep arrangement of the boiler tubes and the clever bringing together of the discharges for the ashes and the slag, which in spite of the size of the boiler necessitates only one flushing channel, and also the single conduit for the gases.

The sectional chamber boiler of 6,996 sq. ft. heating surface, and for 617 lb. operating pressure shown in Fig. 4 has stationary stair step firing with initial gasification for raw Rhineland brown coal of 2,880 to 3,240 B. t. u. per lb. minimum heating value. With this fuel which contains over 50 per cent of water, the boiler produces specific outputs of 8 to 13 lb. per sq. ft. per hour in regular service. In respect to this high output and to foaming of the feed water, the boiler is provided with two cross drums so that the steam-water mixture will distribute uniformly to both drums. This boiler also has comparatively strongly inclined tubes which are rolled vertically into the sectional chambers. The boiler tubes are replaced towards the rear so that the coal bunker may be placed lower than customary. The superheater can also be replaced from the rear. The ribbed tube economizer, the screwed connections of which are accessible during operation, offers 13,993 sq. ft. of heating surface within a small space. The feed water temperature reaches nearly to the ebullition temperature, nearly 482° Fahr. at the outlet, without causing difficulties (water hammer).

The great influence of the powdered coal firing system upon the design of water tube boilers is shown in Fig. 5, especially in respect to the size of the combustion chamber. A few large boilers are being built to be fitted with American stokers, but time must show whether this type of firing will prove satisfactory with the changes in grade of the German coals.

In Europe most of the boilers using pit coal are still being equipped with traveling grates. In competition with the powdered coal and stoker systems, traveling grates have been perfected so much that even boilers of 200 ton per hour steam output can be equipped with traveling grates without incurring difficulties. The introduction and perfection of the suspended or pendulum fire bridge and the sectionalizing of the underdraft traveling grates into zones play a big part in this development. Underdraft, used formerly only for low grade fuels, is used more and more for higher grade coals. In a North German central station there are two vertical tube boilers of 8,611 sq. ft. each and for 514 lb. gauge operating pressure, of which one is fired by a traveling grate and the other by a powdered coal system. The first attains at least the same efficiency of 85 per cent as the latter, not figuring the consumption of the coal preparation plant. The floor area of both boilers is the same, but the volume of the traveling grate fired boiler is considerably smaller. Stoker firing systems require also considerably more space than traveling grates, especially for the burning-out pit. In the modern boiler plants and with suitable fuel, the output is increased considerably by preheating the combustion air. Good results are being obtained by preheating the underdraft to 392° Fahr. Hot upper air is also forced onto the front part of the grate to speed the ignition and to increase the grate output. Large and high combustion chambers have been taken over also

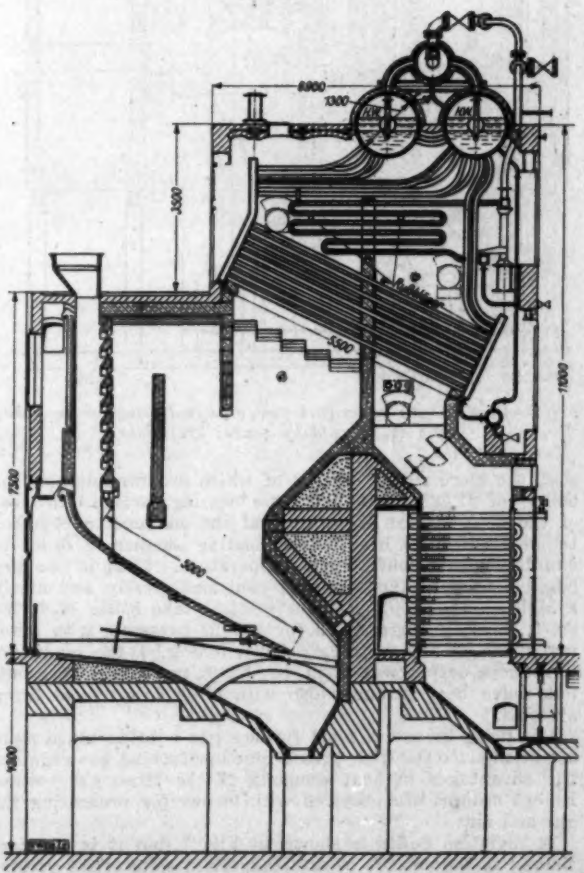


Fig. 4—Sectional chamber boiler with stair grate and initial gasification shaft for raw brown coal; 6,996 sq. ft.; 617 lb. gauge; 797° Fahr.

from the powdered coal firing systems. Due to the reflection of the volume of gas to the fuel bed, the ignition arch becomes dispensible to the traveling grate system. With underdraft traveling grate firing, with zoning for the combustion air, very low loads may be carried without an ignition arch, without extinguishing the fire. Very poor fuels (cokes) are fired in this manner.

Special attention has been given in Germany to the perfection of the grate firing system for raw brown coal. Stationary and automatically moving stair or step grates or trough grates are used almost exclusively for raw brown

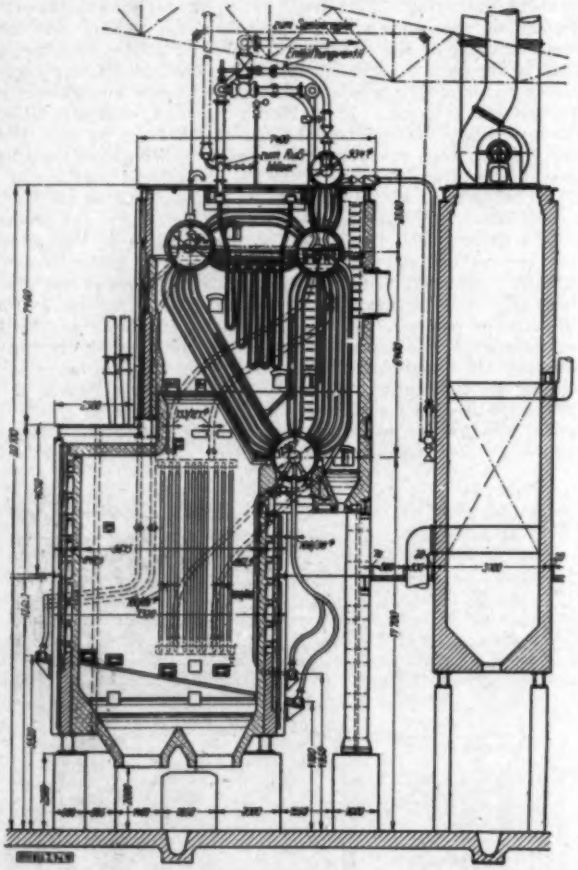


Fig. 5—Vertical tube boiler with powdered coal firing for gas coke; 8,073 sq. ft.; 544 lb. gauge; 797° Fahr.

coal, the more recent designs of which are suitable also for boilers of 21,528 sq. ft. and more heating surface. In most of the designs care is taken that the combustion chamber radiates but little heat to the heating surface in order to maintain a sufficiently high temperature. Thus it becomes possible to burn the very wet coal smokelessly and attain a high grade output. On one vertical tube boiler of 10,764 sq. ft. heating surface and for 235 lb. pressure, with automatic trough firing system, shown in Fig. 6, the maximum continuous output was 12 lb. per sq. ft. per hour. Such outputs have been attained also with other brown coal firing systems.

Gas firing by use of blast furnace gas is being given more attention since the high pressure steam turbine has regained the advantages in heat economy of the large gas engine. Recent designs are provided with means for preheating the gas and air.

A radiation boiler is shown in Fig. 7, but it is not considered as the ideal to be attained, for in spite of the greater specific steam output these boilers are just as expensive or even more expensive than the types of boilers described above, considering all technical and economical points. An

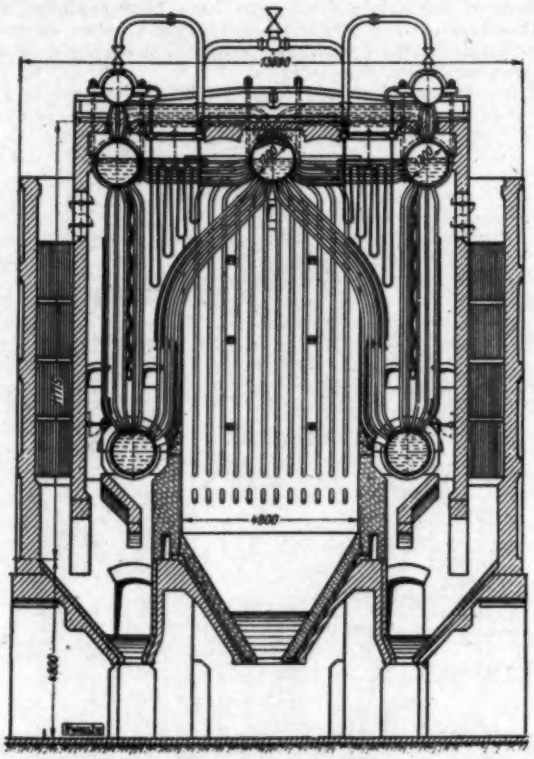


Fig. 7—Powdered coal fired radiation boiler; 5,651 sq. ft.; 470 lb. gauge; 2,691 sq. ft. superheater; 11,302 sq. ft. air preheater

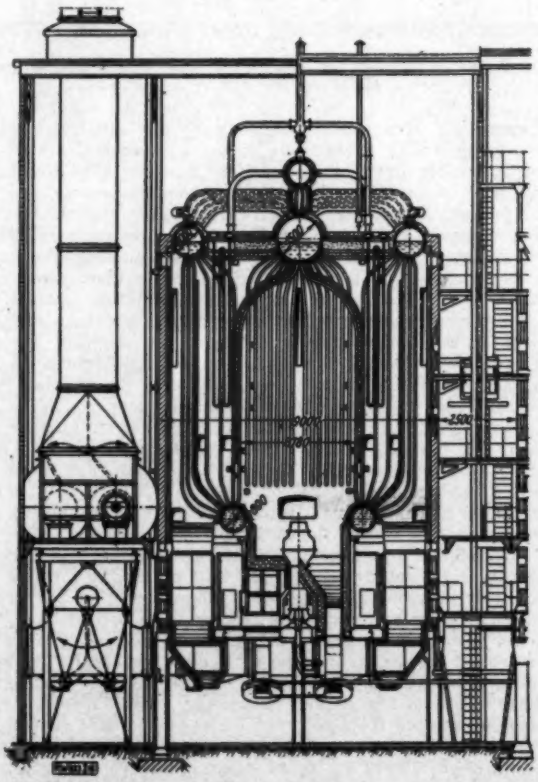


Fig. 8—Three improved Bettington powdered coal fired boilers; 53,819 sq. ft.; 367 lb. gauge; each superheater, 23,680 sq. ft.; each air preheater, 96,875 sq. ft.

improved design of the Bettington boiler for powdered coal firing is shown in Fig. 8, which adapts it for the larger boiler plant. The advantages of the path of travel of the flame is that the entering air-dust mixture is vigorously radiated by the returning flue. The period of ignition and thus the combustion period are shortened. The combustion chamber can be well loaded and low loads may be carried with good ignition by regulating the jet of coal dust and the draft. More recent boiler developments are those of Schmidt, Atmos, Loeffler, Brown Boveri & Co., and Benson, of which only a few plants are in operation. However, of the boilers

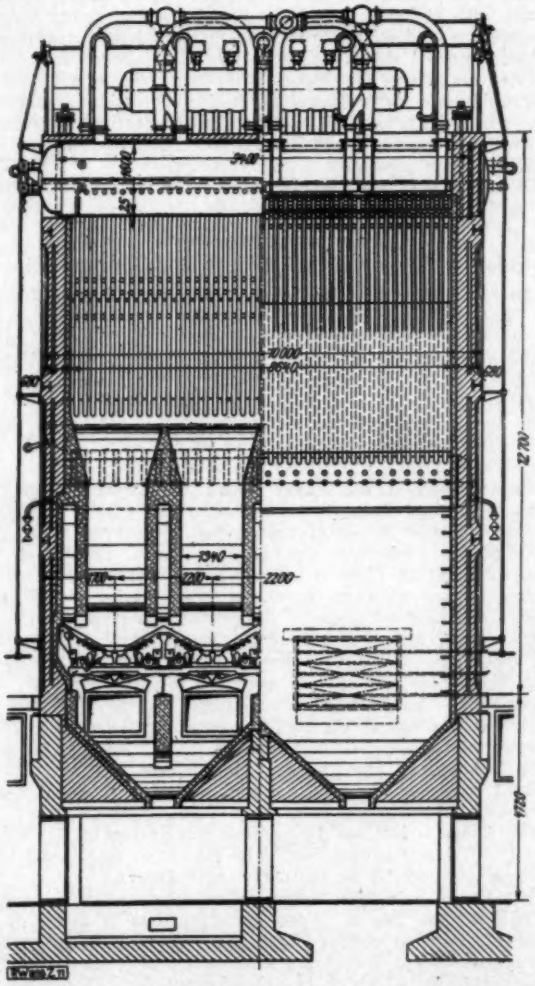


Fig. 6—Four-drum vertical tube boiler with mechanical trough grate firing; 10,764 sq. ft.; 255 lb. gauge; 707° Fahr.

described, some have been in service for years at pressures to 661 lb. and a few at pressures to 1,470 lb. with satisfaction.

An announcement from the offices of the Boston Woven Hose & Rubber Company is to the effect that H. S. Merrill, for more than eight years with the Boston Belting Company and formerly with B. F. Goodrich Rubber Co., has been appointed to take over the Denver territory. C. W. Stanton, former Denver representative, has been transferred to greater responsibilities in the Ohio territory with headquarters at Cincinnati. L. P. McGoff, who represented the company in Cincinnati for several years is returning to New England and will devote his time to a special type of field work in that territory.

Fibre Making Processes, Inc., has moved its offices to The Willoughby Tower, 2 South Michigan Blvd., Chicago, Illinois.

An Economical Power System

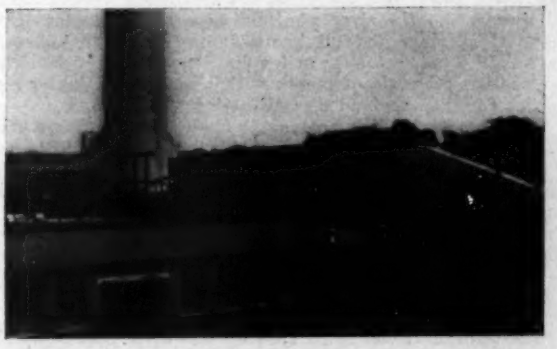
S. D. Warren Co., Cumberland Mills, Maine, Pioneer Users of Electric Generating Machinery

By F. A. WESTBROOK

THE private hydroelectric power systems of several of the largest industrial plants in New England are very interesting for a variety of reasons. In the case of the paper mill of the S. D. Warren Co. at Cumberland Mills, Maine, there is among other things an historical interest, because some of the first electrical generating machinery in that part of the country was installed by it. There is a further interest because the company owns most of the water power rights on the Presumpscott River, which is the outlet of Lake Sebago and has developed all available sites, generates all of its own power, some by steam, and sells its surplus to the public utility operating in the same district. Finally it has a highly developed system of block distribution within its own plant which is very well adapted to large operations covering a large amount of ground.

Power Generating System

As a user of electrical power, the Cumberland Mills plant is a pioneer and was one of the first industrial plants in the country to install electrical generating machinery. In 1887, it installed two bi-polar machines driven by high speed steam engines to run about 900 ten-candle-power incandescent lights which replaced hundreds of ill smelling and



Power plant of the S. D. Warren Company, Cumberland Mills, Maine

dangerous kerosene lamps. In 1889, it constructed the first electrical transmission line in Maine. It was only one mile long, carried current at 1000 volts from a water power station to the mill where it served four 40 horsepower motors belted to shafting. The present elaborate system serving 650 motors with a connected load of 13,000 horsepower sprang from this beginning, and Mr. William B. Bragdon, who has been with the company over forty years, is the electrical engineer who has personally supervised the installation, maintenance and operation of all of it.

In the first place, this company has four hydroelectric generating stations on the Presumpscott River between the outlet of Lake Sebago and Cumberland Mills, a distance of twenty miles. The capacity of these stations is as follows: Eel Weir, 1800 Kv.-a.; Dundee, 2400 Kv.-a.; Saccarappa, 1400 Kv.-a. and Smelt Hill, 1000 Kv.-a. These stations are all connected with an 11,000 volt power transmission line which carries the power to the mill

Several other companies have water power developments on the river and at one of these, Mallinson Falls, there is a textile plant which uses all of the available power during the day but has a surplus at night. As the paper mill runs twenty-four hours a day, an electrical connection has been made between the generating machinery at the textile plant and the 11,000 volt transmission already mentioned so that the paper company may purchase this surplus power. This is a material saving because as a general thing the water power has to be supplemented with steam power and this arrangement saves coal.

The S. D. Warren Co.'s line is also connected with the system of the Cumberland County Light & Power Co. at two points from which it draws power at certain times of the day when the mill is under full operation. There are times, however, when the mill is running slack and does not need all of its hydroelectric power. At such times it sells its surplus to the utility, thereby enabling it to save coal, and sometimes there are months when the charges about cancel each other. As a matter of fact, during the course of a year this arrangement greatly reduces the cost of purchased power. It also tends to lessen overhead at just these times when production is low and any such reduction is most welcome.

This mode of operation has been going on for twenty-five years with the greatest satisfaction to all concerned. Aside from the fact that it has meant the practical elimination of waste of water power and the saving of much coal, this satisfaction is largely due to the manner in which the paper company has exercised its right of flowage control of the Presumpscott River so as to keep the other users of water power along the river informed as to the amount of water available. This is accomplished by means of the paper company's load dispatcher who determines from day to day how much water it is prudent to draw off from the storage allowed it by law from Lake Sebago. Taking into consideration the level of the Lake, the dryness of the season and the time of year or likelihood of rain, the load dispatcher endeavors to maintain as even a flow in the river as circumstances permit. When he has settled on how much water may be used, the dispatcher telephones to all users along the river what the flow will be so that they make their plans in full knowledge of what they are to have. It is a very fair and enlightened way of handling a situation otherwise fraught with almost unlimited possibilities for disputes and dissatisfaction.

The 11,000 volt line enters the main distribution station at the mill through lightning arresters placed outside and then passes through oil switches located in separate cells for each leg. From the control board at this point, branch circuits at 11,000 volts are run to each of the sub-stations in the plant. Storage batteries have been provided to operate the switches in case of necessity and the whole station has been planned for fifteen years ahead.

Internal Block Distribution System

The total of 13,000 hp. is split up into three approximately equal blocks and is distributed to three corresponding sections of the plant provided with its own sub-station. Each of these sub-stations is entirely independent of the others and is controlled in the main station of the plant where the steam turbines are located. A fourth sub-station is now under construction to serve a new building which will probably be placed in operation the last of this year.

Each of these stations has a transformer bank to step the voltage down from 11,000 to 440—each station carrying one half of the plant lighting load. Provision for emergency service has been for lighting as well by having one of the main power transformers wired with special taps to give 120 volts current.

The power transformer secondaries are wired to a switch-board which has been made with separate panels for each feeder going to the mill. These panels are equipped with oil circuit breakers, wattmeters, ammeters and recording volt meters.

In the case of the lighting current, the secondary side of the transformer is wired to a switch-board in a room by itself, separated from the transformers by a fireproof partition so that if anything should go wrong in the main transformer and power switch-board room of the sub-station, it will still be possible to control the lighting with safety. This switch-board also has separate switches for each circuit extended to the lighting distribution panel boxes in the mill buildings.

One of the sub-stations is located next door to the main station so that no great problem is involved so far as the transmission of energy is concerned. The two others now in service are some distance away and are served by 3-phase wire conductors supported on insulators. For the sub-station now under construction, an aerial 3-conductor, paper insulated and lead covered cable is used. This is suspended by rings from a messenger cable supported by small steel roof fixtures. This method of high tension distribution may be found in numerous steel mills and other large plants covering a great deal of ground and is also being used by several public utilities with good success. It is safer than open wires both from the standpoint of continuity of service and accident.

Distributing centers to the motors are located at various strategic points in the plant. The usual distribution box has been eliminated and instead the feeder is run into a long trough with spliced connections to a series of fused safety disconnect switches, one for each motor in the department served, mounted side by side on the wall. Sometimes it is mounted on a steel framework where there is no wall space.

Grouping the control equipment at one point for all the motors in a department is often of great practical advantage as then the foreman can easily start or stop any or all machines from one point.

All wiring is in rigid conduit except the motor leads which are in flexible conduit.

Use of Paper Board Containers Spreading

The New York Division of the Salesmen's Association of the Paper Industry had as guest at the usual weekly meeting on April 15, Albert W. Luhrs, who is in charge of sales promotion work for the Paper Board Industries Association. Speaking of the methods employed by the association in establishing contacts with present and possible users of fiber and corrugated board containers, he said that these were made through the secretaries of the various trade associations. After establishing contacts in this way, the sales promotion men of the Paper Board Industries Association make individual calls on manufacturers, wholesalers, retailers and other types of consignees. A survey is usually made of the concern's packaging problems, the effort being put forth to show a saving in freight charges and a saving in loss through breakage where paper board containers are used in place of wooden or other containers.

Mr. Luhrs ran a short motion picture reel to illustrate the greater resistance to pressure of the carton as compared with bushel baskets such as are used for packing fruit and vegetables. Another moving picture showed the type of tests and demonstrations used for certain types of containers. Dummy dynamite packing cartons were loaded in a gondola freight car and the car then shunted against three freight cars loaded with coal and with the air brakes set. The tests were made under the joint supervision of the Paper Board Industries Association, the Bureau of Explosives and the Railway authorities. The results of these tests were extremely favorable to the carton container.

Mr. Luhrs said that some coffee roasters have recently abandoned the use of paper board cartons in favor of tin cans for packing coffee. This competition is being met by the Paper Board Industries Association through newspaper advertising in which it is properly set forth that the unsatisfactory experience with paper board containers for coffee has followed from the use of improper types of boxes rather than any inherent unsuitability of the paper board container.

Attention was called by the speaker to the new ruling of the Government Printing Office by which the specifications for paper shipment have been changed to permit the use of either wooden or fiber board containers at the option of the shipper. He said that during 1929 the Government Printing Office would receive about 11,000,000 lbs. of paper packed in cartons. The association has persuaded the government to use carton containers for the sheets of post-cards distributed to the various post offices. Each sheet contains forty cards and a case holds 300 sheets.

An interesting development of the use of fiber board containers is the packing of slack coal in 10-lb. cartons. When the furance is fed, the coal instead of being shovelled on is thrown into the furance, box and all.

There was good attendance at the luncheon meeting and the service came in for special commendation.

Exposition of Chemicals Used in the Industries

Twelfth Exposition of Chemical Industries Reveals the Importance of Chemistry to National Progress and Welfare

THE Exposition of Chemical Industries which was staged at the Grand Central Palace, New York, during the week May 6—11, represented much more than a display of chemical products, being a remarkably comprehensive revelation of that which is basic in all industries—an exhibition of the development of chemistry and chemical engineering during recent years. There was scarcely a product, piece of apparatus or machinery displayed which was not applicable in some branch of industry, and many of them were of interest if not actually used in the pulp and paper industry. In all, there were upwards of 400 exhibits. The exposition was opened on Monday, May 6, at 2 P. M. by Arthur D. Little, chairman of the Exposition Committee, who directed Televox, the Westinghouse automaton to signal the opening of the doors. At Mr. Little's verbal request, Televox responded and blew a musically toned horn, giving the exposition its official start. The automaton is a development based on chemical research. Later the Televox gave certain demonstrations operating a floodlight and oscillating fan, a piece of chemical apparatus in the exposition and a set of glass tubes filled with gases from the atmosphere which were activated by electrical discharges to reproduce nearly all the colors of the rainbow.

Doctor Little read a message from the White House in which President Hoover declared his sympathy with the purpose of the exposition and asked him to convey the following message:

"The chemical industries are among the foremost of those that ally themselves continuously with workers in pure science and thereby quickly transform discoveries of creative research into practical products for human use. The fact that your Exposition equally interests chemists, engineers and manufacturers symbolizes this close bond, so desirable in all industry. I wish you all success."

Apart from chemicals and chemical apparatus, many new alloys and synthetic products were exhibited which are now finding application in aviation, radio, television, talking pictures, etc. The exposition as a whole was of great educational value. A students course on the fundamentals of chemical engineering and industrial chemical practice was given during the week under the chairmanship of Dr. W. T. Read. There was a large registration and the student body was divided into sections, one group of which comprised students having a knowledge of elementary chemistry and the other comprising advance students and those having a more extensive knowledge of chemistry and chemical engineering. There were general lectures with reviews and discussions of process control, materials of construction, mechanical separation and unit processes. Arthur Wright, of Filtration Engineers, lectured on filtration; Dr. Allan Rogers lectured on the progress of leather manufacture and John B. Downs on wood technology. Automatic control of temperature was the topic of a lecture by Ismar Ginsberg, while Henry L. Galson outlined the theory of drying, in which dryer calculations were discussed.

Brief mention of the principal exhibits of papermaking interest will be found below.

Air Reduction Sales Company, 342 Madison Avenue, New York—Some rare gas elements and mixtures of these elements were on display in an attractive cabinet, but welding and cutting apparatus and supplies featured the exhibit of this company, examples being shown of mechanical welding by the oxyacetylene process.

Alsop Engineering Company, 47 West 63d Street, New York—Showed a new type of electric mixer tank, glass coated with a push-pull mixer permanently attached to a special bracket. There were also exhibited Hy-Speed portable mixers in sizes from 1/10 hp. to 5 hp.; Hy-Speed internal pressure filters; Hy-Speed portable pumps and a Hy-Speed vacuum bottle filling machine. Vapor-proof motors make it possible to use the electric mixers in explosive atmospheres.

American Hard Rubber Company, 11 Mercer Street, New York—Some new types of hard rubber equipment were exhibited and there was a good display of pumps in operation. Ruber-lined tanks and rubber-lined pipes of new design were also displayed.

Anti-Hydro Waterproofing Company, Newark, N. J.—The densifying of concrete so as to make it impervious to water, oils and alkalis and resistant to certain acids was the feature of this company's exhibit. Concrete pedestals painted white with "white cement paint" formed part of the exhibit. The paint is made by stirring into a solution of liquid Anti-Hydro and water enough white Atlas cement to make a thick, creamy cold water paint. Concrete tanks painted in this way are said to make good containers for sulphuric acid, nitric acid, acetic acid, tannic acid, caustic soda, etc. Painted concrete floor slabs showing abrasion tests on concrete and the permanent hardening and wear proofing properties of the floor were exhibited. Surface hardening is imparted by "Armortop".

Armstrong Machine Works, Three Rivers, Mich.—The outstanding exhibit at this booth was a model of the Armstrong Steam Trap, the bucket tube and trap body of which were of glass so as to make visible the entire cycle of operation both in handling condensate and air while operating under 5-lb. steam pressure. Special traps for handling dilute acid, and traps with low chrome iron mechanisms for handling hot concentrated nitric acid under pressure, were also exhibited. The mechanisms for handling dilute acid had lead-coated surfaces. A sectional model of a compound or piston-operated trap for handling large quantities of condensate under pressure was featured.

Audobon Wire Cloth Company, Audobon, N. J.—Industrial wire cloth in steel, galvanized iron, brass, bronze, monel, and nickel constituted the principal display at this booth. In addition Audobon flexible spiral weave fabrics were shown. These fabrics have been suggested as a replacement for fourdrinier wire for coarse paperboard machines. Sieves, straining, filtering and screening apparatus were also exhibited and were viewed by representatives of papermaking, metallurgical and chemical plants.

Bachmeier & Co., 438 West 37th Street, New York—The only product outside of a line of dyestuffs that was of interest to papermakers in this exhibit was a substance called Baco Penet intended for cleaning the felts of calendering machines. Baco Penet is used in a boiling off solution which is said to leave them soft and clean.

Bailey Meter Company, Cleveland, Ohio—Long distance indicators and a new line of feed water regulators were shown by the Bailey Meter Company. Other Bailey equipment included a Bailey recording and integrating gas meter compensated for pressure variations. This was shown in operation and there was also demonstrated a Bailey control drive, cut away to show the action of clutches, limits, etc. There was also displayed an electrically operated fluid meter and a gravity recorder.

Bakelite Corporation, New York—Bakelite materials and their applications in industry formed the basis of an inter-

esting display. In the pulp and paper industry, Bakelite applications are as yet limited. Laminated gears of Bakelite provide silent and enduring operation on paper drying equipment and molded wedges of Bakelite are used as supports for the hoods over paper machines. In the wedge is embedded the head of a long bolt which is the actual unit of support. Paper and pulp mill engineers who visited this exhibit likely received new suggestions adaptable to papermaking equipment.

Blaw-Knox Company, Pittsburgh, Pa.—An interesting exhibit of specialties in steel products was made by this firm, as for instance, a section of hammer-welded vessel, cut at the weld, to show the homogeneity of plate after welding. The efficacy of forge and hammer welding was shown by several welded pieces, and there were samples showing the welds of chrome iron and other alloys. A steel armoring for concrete floors known as Blaw-Knox Floorgard, and Blaw-Knox steel grating and open flooring, were also exhibited.

The Brown Instrument Company, Philadelphia, Pa.—An interesting display of flush type power plant instruments mounted on black metal panels was made by this company. A feature of the exhibit was a large 4-ft. working model of a flowmeter, showing the mechanism and operation of the inductance bridge principle. The display as a whole afforded an excellent opportunity to study the use of meters in the modern plant. There were indicating and recording pyrometers, indicating and recording flowmeters, recording thermometers and pressure gauges, duplex temperature and pressure recorders, strip chart recording thermometers and an indicating resistance thermometer so sensitive as to operate when the bulb is clasped in the hand. Brown electric carbon dioxide meters were seen in operation and portable pyrometers and potentiometers were included in the exhibit.

Buffalo Foundry and Machine Company, Buffalo, N. Y.—Of special interest to the paper industry in this exhibit was the model of a quadruple effect vertical rapid circulation type evaporator, a replica of two machines now being operated in a large sulphate mill. The original machine handles 325,000 gallons of black liquor a day, concentrating the liquor from 11 to 70 per cent solids. The machine is equipped with various types of practical automatic devices so that despite its size it may be operated successfully by one man. The original is 15 feet wide, 55 feet long and 48 feet high. An atmospheric double drum dryer used for drying either dilute or heavy liquors, a flaker or cooling drum, a continuous crystallizer and some other minor apparatus, were also exhibited effectively.

The Carborundum Company, Perth Amboy, N. J.—In addition to a display of fire clay refractory tile, this company exhibited a small furnace designed to show visually the relative termal conductivity of silicon carbide, aluminum oxide and refractories; models of Carboradiant annealing furnaces, air heaters and recuperators were also shown and there were photographs of apparatus and materials besides refractory bricks and shapes.

Carpenter Steel Company, Kenilworth, N. J.—The exhibit of this company adjoined the booth of Lee Wallis Gibbons and represented a line of stainless steel alloys, welded fabricated equipment, seamless and welded tubing, forgings, castings, deep drawn products and a variety of machined products in these alloys.

Chemicolloid Laboratories, 44 Whitehall Street, New York—The Charlotte Colloid Mill and Homogenizer featured the exhibit of this company. The mill is a grinder and emulsifier that can be applied to the disintegration and refining of wood fibers, with, it is represented, 75 per cent less expenditure of power than a jordan engine. The machine consists essentially of a grooved, conical rotor which rotates within a correspondingly grooved conical stator, the clearance between them being regulated by a calibrated adjustment device.

Cooper Hewitt Electric Company, Hoboken, N. J.—A test cabinet was used in this booth to test the fading of dyes, paints, fabrics and other materials exposed to sunlight. Laboratory equipment for developing ultra violet rays was also on view.

Dings Magnetic Separator Company, Milwaukee, Wis.—Magnetic separators for removing fine particles of magnetic iron from material in solution and deleterious iron in small particles from cut or pulverized substances were shown. The first apparatus referred to, Type U, or wet type, is used in ceramic and general chemical industries while the other, Type B machine, finds application in the treatment of dry material.

Dorr Company, Park-Lexington Building, New York—This display centered around scale working models of Dorr equipment used in chemical, metallurgical and sanitary work. The Dorr Impeller Agitator was illustrated by a model in a glass tank. A large, slow-speed propeller in a draft tube provided low velocity circulation while raking the bottom to prevent deposition of solids. The instrument is especially adapted to the handling of chemicals which are adversely affected by air agitation as well as those dilute pulps in which the agitation must be at such a low velocity as not to break down fragile flocs. Working models of Dorr thickeners, classifiers and filters were also shown.

The Duriron Company, Dayton, Ohio—The chief exhibit made here was a self-priming, centrifugal acid pump, operated in a way to show its capacity for handling air and water. A new Y-valve was also on view, besides a general showing of Duriron exhaust fans, pumps, valves and piping. Papermakers who visited this booth showed interest in material suitable for dissolved alum systems in paper mills.

Eastman Kodak Company, Rochester, N. Y.—In addition to photographic chemicals, photoengraving chemicals and supplies, a most interesting exhibit was made of the analytical applications of Eastman organic chemicals. Motion pictures showed chemical industries and processes, glass-blowing technic and other things of interest to visitors. Other features of the exhibit included a complete line of nitrocellulose and cellulose acetate solutions used in the manufacture of pyroxylin finishes and artificial leather. Eastman adhesive shielding tape, used for protecting various articles such as machinery and automobile bodies, was also exhibited.

The Eaton-Dikeman Company, 537 Pearl Street, New York—Filter papers of various grades from fine chemical to industrial papers were shown in circle, sheet and roll form. The exhibit also included a line of specialty absorbent saturation papers.

Eimer & Amend, Third Avenue, New York—In addition to a line of chemicals, solutions and minerals, there were to be seen at this booth some apparatus of Eimer & Amend's own construction, such as a bleach liquor tester, extraction apparatus, Hellige comparators for determination of pH value. Owing to the extensive variety of materials and stock listed by this firm it was found impracticable to exhibit other apparatus than those manufactured by it.

Charles Engelhard, Inc., Newark, N. J.—Chief among the exhibits made by this firm was the Engelhard SO_2 analyzer as used in sulphite pulp mills. The analyzer was shown in operation; a cutaway was made of the thermal conductivity cell so that the construction and application of the method could be grasped by visitors. Automatic control equipment and temperature measuring instruments were also on view, in addition to thermo couples and thermo couple mountings.

Everlasting Valve Company, Jersey City, N. J.—This company occupied the space they have held for the past ten years with a display of Everlasting valves, blowoff units and a new valve called the Straightway Screwed Down Valve which is especially adapted to straight line installations.

Filtration Engineers Incorporated, Newark, N. J.—This company gave an interesting and effective demonstration of the operation of the FEinc Decker, the filter with the strings. The machine was handling white water to which a little sulphite pulp was added in the same manner as is done on the large commercial save-alls, a continuous sheet of stock being discharged by the FEinc method. Endless parallel strings lifted the cake from the covering wire and carried it to the discharge roll, where it fell into the repulping trough. No doctors or couch rolls are used, consequently there is no mechanical wear on the covering wire, which remains in a clean open condition owing to the string discharge and shower. In order to run the machine continuously, a means

was devised for repulping the discharge cake. This consisted of mounting the machine on a small tank in such a way that the discharge stock fell into a chute, where it was repulped and carried into the tank by the returning effluent, from whence it was bumped into the machine.

Foote Bros. Gear & Machine Company, Chicago—A practical demonstration was made at this booth of a 1 hp. motor capable of lifting, with a total reduction of 19,025,344.8 to 1, a load of 811,777,777 lb. on 1¾ inch slow-speed shaft making one revolution in a week and seventeen hours. A series of worm reducers were shown, but the Hygrade vertical worm gear speed reducer was featured. This is adapted particularly for vertical agitator drives in the chemical industry. A display board was exhibited bearing the various types of gears manufactured by the company.

The Foxboro Company, Foxboro, Mass.—The usual display of indicating and recording gauges, dial type and recording thermometers, controllers and tachometers was made by this firm who also showed a steam flowmeter in operation, as well as a chromium plating duplex temperature recorder-controller. These illustrated the quick action, sensitivity and close control possible with high-grade instruments of their type.

General Ceramics Company, 50 Church Street, New York—A display of various types of laboratory and industrial pumps, filters, valves and faucets of stoneware was made by this company. Representative of a new series of stoneware pumps for handling acids and other corrosives was a centrifugal pump having the novel design of enclosed propeller, all working parts being made of chemical stoneware. The capacities of these pumps range from 8 gallons a minute up to 1,000 gallons. Miscellaneous equipment made of a new white glazed, iron-free stoneware were also shown.

General Electric Company, Schnectady, N. Y.—In addition to motors and control of interest to the chemical industry, this company presented an educational exhibit from its research laboratories, including streamer discharge, Tesla coil and effects, thyratrone tubes, photophone transparencies, a high-frequency furnace, and various photo-electric tube applications. A voice controlled toy train was included in the display. This was controlled by voice impulses transmitted to it through an ordinary telephone transmitter and responded to the commands, "Go Ahead", "Back Up" and "Stop".

The Gross Lead-Burning and Coating Corporation, Cleveland, Ohio—Exhibited in this booth were homogeneous lead-coated fans and blowers for the pulp industry, and a steam jacketed tank with agitator, as well as a display of photographs of typical lead-coated jobs by the Gross formula process.

Hardinge Company, York, Pa.—Several engineers of this company were in attendance at this booth to explain the working principle of Hardinge apparatus of which working models were exhibited. The Hardinge Clarifier, dryer, and pulverizer were shown.

The Hauser-Stander Tank Company, Cincinnati, Ohio—An exceptionally attractive display was made of wooden tanks and cases for all purposes, some being especially designed for paper mill work. The main feature of the exhibit was an agitator tank with concave bottom having baffle staves, acid resisting outlet, gauge glass, and self-contained ball thrust agitator drive. Plain rectangular tanks and tanks lined with copper, metal, nickel, galvanized iron, lead, rubber and asphalt were on display. There was also interesting exhibit of tank wood specimens, each labelled with its common name and its botanical name. In this way cypress, yellow pine, red cedar, Douglas fir, redwood, white cedar, yellow poplar, white oak and hard maple were shown.

International Paper Company, 100 East 42d Street, New York—An interesting display of specialty papers, boards, bags and sacks was made by this company, Ten Test, the insulating and building board of the International Fibre Board Company being featured along with the single and multi wall, valve and open mouth sacks of the George Sherrard Paper Company; also single and duplex sacks and bags of the Continental Paper & Bag Corporation, packing materials of Veldown Company, Inc. and Gator Hide kraft paper and Gator Hide mulch paper.

Keewaunee Manufacturing Company, Keewaunee, Wis.—This firm exhibited a line of laboratory furniture, including cabinets, cases, fume hoods, and chemical desks for use in the chemical laboratory and for classroom instruction in schools of chemistry. There was also a complete line of plumbing and plumbing equipment showing piping connections for gas, water, steam, air, and vacuum. Soapstone tops for tables and desks as well as chemical sinks of soapstone formed part of the exhibit.

Laboratory Furniture Company, Long Island City, New York—Enameled steel laboratory furniture was exhibited here, the fireproof, acidproof, and heat resisting properties of which were particularly stressed. Closed and open type laboratory fume hoods and distillation hoods were shown, together with various accessories such as steam baths, electrical and plumbing fittings.

Laughlin Filter Company, Elizabeth, N. J.—In connection with the display of the Laughlin Continuous Centrifuge an illustrated folder was distributed giving sectional views of the machine. The exhibit included a 36 x 40 inch basket-type centrifuge suitable for dewatering and concentrating paper pulp and chemicals. Parts of the solid bowl type of continuous centrifuge were also exhibited, these being intended for concentrating finely divided materials such as clay, lime sludge and black ash carbon.

Leeds & Northrup Company, Philadelphia, Pa.—Featured as part of a complete operating display of measuring instruments were automatic conductivity control, automatic pH control, humidity recorder, CO_2 recorder and various types of temperature recorders. The L. & N. recording mechanism is considered standard for a wide variety of applications, being used in connection with various electrical circuits, each adapted to the particular type of measurement to be made. Particularly interesting was the null potentiometer circuit which is extensively used for temperature control in industry.

Lewis-Shepard Company, Boston, Mass.—Jacklifts, stackers and similar machinery were illustrated by photographs of a large number of illustrations, and an actual power stacker for piling material was exhibited, along with a jacklift system of handling material on platforms.

The Little River Redwood Company, 103 Park Avenue, New York—This company made a display of photographs of redwood pipes, cooling towers, tanks, and industrial redwood lumber which is so resistant to the termite and rot. The main feature of the exhibit was a 600 gal. redwood tank equipped with a Nettco agitator in operation.

National Lead Company, 111 Broadway, New York—The Lined Products Division of this company exhibited a series of pumps, valves and piping, including a "United" chemical hard lead centrifugal acid pump in operation. Other products on display comprised chemical hard lead and lead lined flanged acid valves and accessories, "United Tubond" chemical lead-lined steel pipes and "United" chemical hard lead chem-rayon valve suitable for conveying acidulous liquors.

The New Jersey Wire Cloth Company, Trenton, N. J.—Samples of wire cloth and screening used in the manufacture of machinery and equipment for the chemical industry were shown at this booth and attracted the attention of visiting paper mill men.

New England Tank & Tower Company, Everett, Mass.—Agitator driving units, both of the open gear types and the finer machines with totally enclosed gears for connecting directly to motors formed the chief exhibit at this booth. A new unit called the New England reducer agitator drive "Model T-37" which is designed for connecting directly to an electric motor was shown. This drive is equipped with Timken roller bearings with the latest design in worm and spur gearing.

Norton Company, Worcester, Mass.—One of the attractive features of the beautiful exhibit made by this company showed the flow of water and of air through Norton porous plates. These plates are composed of electrically fused alumina and afford remarkable porosity. This was demonstrated by sealing a plate in an air-tight container, placing a layer of water on its surface and then blowing air up through the under side of the plate. The plates are supplied

in different shapes and sizes, in disks, tubes and cylinders of different thicknesses. It is possible by means of these plates to diffuse SO_2 gas through water. A segment of Norton pulpstone formed part of the exhibit, which also included a line of laboratory supplies, crucibles, electric furnace coils, and filter cones of alundum, which is the trade name for fused alumina. A number of grinding wheels of small diameters were also shown.

Oliver United Filters, San Francisco.—The display of filters, thickeners, pumps and various parts and accessories of the Oliver equipment was quite complete and included the Oliver continuous filter; Sweetland pressure filter; Sweetland thickener; Sweetland cantilever filter; Oliver crystal filter; Oliver dewatering filter; Kelly pressure filter; American pulp type continuous filter, Oliver centrifugal pump, Olivite acid pump. An operating exhibit of the Oliver continuous filter could be seen in the booth of Proctor & Schwartz, of Philadelphia.

Palo Company, 153 West 23d Street, New York—A varied line of apparatus for industrial and laboratory use was on view at the booth of this company. There were to be seen the Palo acid-alkalimeter for pH determinations; daylight lamps for color matching and general illumination; new types of balances; Meker furnaces; Ives tint photometer. Microscopes and accessories, including photomicrographic equipment were also exhibited. In addition a substitute for platinum called Palorium was on display, besides new types of balances and Durieux filter paper.

Philadelphia Quartz Company, Philadelphia, Pa.—An attractive feature of the display made by this company was a mass of silicate of soda in lump form, illuminated in such a way as to reflect irridescent rays. Another attraction was a poster, "Silicate of Soda Tree", charting the various uses of silicate of which different grades were on display, including liquid, powdered and solid silicates. Doucil, a water softening material was also exhibited.

Quigley Furnace Specialties Company, 56 West 45th Street, New York—The exhibit of this company was divided into two sections, one having to do with Hytempite and other refractory products. An electric furnace was operated to demonstrate the properties of Hytempite under service conditions and a motion picture apparatus told the story of the product and its uses. A demonstration of Quigley acid-proof cement served to exhibit the mechanical strength of this cement in addition to its chemical resistance. In the second section of the exhibit the Quigley line of protective coatings were demonstrated. These coatings resist acids, alkalis and strong brine as well as water and are intended for the protection of metals, concrete, brick, cork, etc. A "cascade" was in action showing metal plates, one half uncoated and the other half coated with Triple-A, exposed to continuous streams of acid, alkalis but also oils, gasoline and other volatile solvents, was exhibited.

Reeves Pulley Company, 76 Dey Street, New York—The chief exhibit in this booth was the Reeves variable speed transmission which is used in the paper industry as providing infinite speed control and speed regulation on all types of production machines. Also shown was an automatic electrical control for regulating the speed of rewinders, etc., and for synchronizing two or more machines.

Republic Flow Meters Company, Chicago, Ill.—This company exhibited for the first time the new Republic control pyrometer, model 133, which eliminates all auxiliary relays on small or medium size furnaces, motor-operated valves, etc. A small electric furnace and a motor-operated valve were shown, both being controlled by the new control pyrometer without the aid of an auxiliary relay.

Richardson Scale Company, Clifton, N. J.—In addition to external lever scales for weighing dusty and pulverized materials like meals, clay, fuller's earth, soda ash, etc., a Richardson "Convey-o-Weigh" was exhibited. This consists of a set of two conveyors, one the feed conveyor and the other the weigh conveyor. The weigh conveyor runs continually and the feed conveyor feeds the proper amount of material to the weighing conveyor. An ingenious mechanism regulates the amount conveyed. When the predetermined quantity has been deposited the supply is stopped automatically through mercury switches actuated by the tilting of the weigh beam. When the weighing has passed off the weigh belt, the mercury switch again tilts back and the feed conveyor delivers material for another weighing. It would seem that a scale of this type could be used for weighing and recording wood chips on their way to the digester, for weighing rags, for weighing coal to storage, etc.

The Roessler & Hasslacher Chemical Company, 709 Sixth Avenue, New York—A display was made here of some of the chemical specialties of the firm and the attractive booth was at the disposal of customers to call and get information concerning the various products.

Ernest Scott & Co., Fall River, Mass.—Large size photographs of actual installations for evaporating, drying, distilling and solvent extracting made an attractive display at this booth in which samples of the product recovered by the use of chemical apparatus of the kind manufactured by the firm were also exhibited.

T. Shriver & Co., Harrison, N. J.—Filter presses, diaphragm pumps and filter cloth constituted the main exhibit of this company, an attractive display being made on the mezzanine floor of the exposition.

Signode Steel Strapping Company, 369 Lexington Avenue, New York—This exhibit comprised models and photographs showing the manner of strapping paper on skids and in frame bundles. The modern method of strapping doors in fiber wrapped, steel strapped packages was also illustrated. A complete Signode outfit was on display and practical demonstrations were given as requests were made by visitors to the booth. Literature with complete illustrations of Signode accessories was distributed.

A. O. Smith Corporation, Milwaukee, Wis.—The Smith design of building pressure vessels was demonstrated in the booth of this company. A large section, weighing close to 6,000 lb., cut from a big high-pressure vessel occupied the center of the booth. This specimen illustrated the reinforcement of openings, elliptical shape of head and method of making seams characteristic of the Smith pressure vessels, as well as the possibilities of the Smithwelding process. An enlarged photograph of a Smithwelded jacketed autoclave adorned the back wall of the booth. Alongside of this were several enlarged and framed photographs illustrating the Smith method of welding. Of particular interest to pulp manufacturers was the Smithwelded sulphate digesters, concerning which bulletins were distributed. This bulletin is numbered 508 and will be sent on request to all interested.

Sowers Manufacturing Company, Buffalo, N. Y.—Seamless jacketed kettles of DOPP construction were shown by this firm. Kettles of this type, seamless, leakless and of single casting can be built with standard and special styles of agitators. A 300-gallon full round bottom, full jacket type DOPP seamless jacketed kettle was on display and the agitators were represented by a 100 gallon DOPP kettle with style "D" double motion bridge type agitator. A display was made of the wide range of products in the manufacture of which DOPP equipment is used.

Swenson Evaporator Company, Harvey, Ill.—Featured at this booth was the Swenson forced circulation high concentrator, a single effect evaporator which takes 50 per cent caustic liquor from the ordinary evaporator system and concentrates it continually to about 70 per cent. When 70 per cent caustic is fed to the caustic pots, the time required to finish a batch of caustic is reduced by about two days. Bulletins were available containing illustrated descriptions of continuous equipment for pulp mill black liquor, as well as of other evaporators and concentrators.

The Turbo-Mixer Corporation, 233 Broadway, New York—Turbo mixers are coming into use as stock agitators in paper mills, for pulps, fillers and sizings and for causticizers, lime mixers and soda dissolvers in pulp mills. Demonstrations were given of the speed and efficiency with which this mixer handles different materials. The separate parts of the mixer, some of which are patented and on which its mixing efficiency depend, were also exhibited.

The W. S. Tyler Company, Cleveland, Ohio—This company exhibited a complete line of woven wire screens and

screening equipment, including the Hum-mer electric screen in both enclosed and open type and the Ro-Tap testing sieve shaker.

The U. S. Stoneware Company, 50 Church Street, New York —A large assortment of acid-proof chemical stoneware was on view at this booth, several new products being exhibited for the first time. These included a new line of U. S. standard centrifugal acid pumps, chemical stoneware lined, and a line of repressed acid-proof brick repressed before firing under a pressure of five tons. U. S. standard acid-proof cement said to possess 10 per cent more silica than similar products on the market was also on view.

The Yale & Towne Manufacturing Company, Stamford, Conn.—An assortment of Yale electric industrial trucks and trailers was a feature of the display made by this company and there was the usual exhibit of Yale hand and electrically operated chain hoists, consisting of differential, screw gears, and spur gear type. Of special interest among this equipment was a new Yale motor-driven trolley. Low-lift three-ton and five-ton electric trucks for skid transportation purposes were shown and also a three-ton high-lift or elevating platform type, used for transporting and tiering of materials. It is an interesting point that the Yale & Towne Company have employed their electrical industrial trucks for moving in, erecting, dismantling and moving out the various exhibits at each chemical show for a number of years.

Tappi Meeting at Chemical Exposition

The Technical Association of the Pulp and Paper Industry was scheduled for a meeting in the Exposition of Chemical Industries on Wednesday, May 8. In the absence of President Glatfelter, R. G. Macdonald acted as chairman. Papers were to be presented as follows:

(1) Welded Paper Digester, by T. McLean Jasper, of the A. O. Smith Corporation, Milwaukee.

(2) An Improved Paper Mill Concrete Floor, by M. W. Meyer, of the Anti-Hydro Waterproofing Co. Newark, N. J.

(3) High Chrome-High Nickel Stainless Alloys in the Sulphite Process, by Lee Wallis Gibbons, New York.

(4) Continuous Filters Featuring Insulating Board Machines, by Charles Fuhrmeister, Jr., of Oliver United Filters, Inc., New York.

(5) Shipping on Skid Platforms by F. J. Shepard, of Lewis-Shepard Company, Watertown, Mass.

(6) Hydrogen-Ion and Conductivity Measurements, by W. N. Greer, of Leeds & Northrup Company, Philadelphia.

Welded Digesters—A general description was given by Mr. Jasper, of the Smith-built pressure vessels, manufactured for the paper industry by A. O. Smith Corporation. The digesters are constructed by the use of the Smith welding process and are in this respect quite different from the ordinary type of soda or sulphate digester. It was mentioned that a new scheme was being developed whereby the cooking of pulp may be radically changed and considerable savings effected. The scheme is still in the experimental stage and little could be said about it for the present.

High Chrome and Nickel Alloys—It was set forth in the paper by Lee Wallis Gibbons that high chrome-nickel alloys were being increasingly used for sulphite equipment and that these alloys would greatly outlast material that have ordinarily been employed for resisting the corrosive action of the solutions used and the gases produced in the process. He indicated some of the salient characteristics of the alloys and gave suggestions regarding satisfactory equipment.

The alloy which has found most favor and which has been most widely available is one containing approximately 18 per cent chromium and 8 per cent nickel. Standard alloys of this composition are made by a number of the larger steel companies. Claims have been made for alloys containing a percentage of molybdenum and they are said to have a distinct advantage. They are not readily available in the United States and Mr. Gibbons confined his talk to the chrome-nickel range of alloys previously mentioned.

Chrome alloys containing nickel are easily welded and the welds are ductile with a tensile strength similar to the rolled product. Blow-off lines from the digester of welded or riveted pipe should form a satisfactory construction, giving a pipe that would be tough and not so liable to fracture as a cast pipe, Mr. Gibbons said. He discussed piping and tubing as well as forgings and castings. He pointed out some of the peculiarities of an 18 per cent chromium, 8 per cent nickel alloy. In the construction of any equipment to resist corrosion it was important that certain characteristics of the alloys be considered carefully. If properly prepared, these alloys are austenitic but with much cold working they lose their austenitic properties. Examination under the microscope discloses alterations in the crystalline structure of the metal, with the deposition of larger crystals, and a metal of this character does not resist corrosion. By proper treatment the right crystalline structure can be restored as well as the austenitic properties of the metal.

Mr. Gibbons said that high chrome-nickel alloy equipment in sulphite mills had been made for such purposes as tie rods for sulphite liquor storage tanks, tank outlets, strainers of various types, relief lines and valves, steam lines to digesters, etc.

Shipping on Skid Platforms—In discussing the skid platform and lift truck method of handling materials, E. J. Shepard, commented on the standardization of skid heights. Work has been undertaken with the co-operation of the Division of Simplified Practice of the U. S. Department of Commerce to remove the handicap of different skid heights. A standard skid was selected which has enabled industries to make greater savings in shipping procedures during the past year than had been effected in the preceding fifteen years. While each industry may require an especially designed type of skid for handling a given commodity to the best advantage, once placed on the skid the handling methods are the same.

He gave some particulars of the cost of power equipment as compared with hand lift truck operation. The electric lift truck averages about $2.50 a day while hand lift truck operation taking the 5,000 capacity unit as an example was put at $15 a day, including repairs, interest, and depreciation on the investment.

He said it was interesting to find that the paper industry which was the first to adopt the skid and lift truck for plant transportation should be the first to employ this system extensively in shipping from the mills to the printer. Two types of skid platforms are used in the paper industry, one being the heavily constructed returnable ones, and the other a low-priced skid constructed of boxboard which becomes the property of the consignee. Many mills shipping to a few large customers have found the returnable type of skid more economical than the nonreturnable type.

Mr. Shepard instanced the case of a New England paper mill which was at the present time using 1,200 returnable type skids which had seen service for four years and were still in good condition. He estimated that the skids had paid for themselves in five round trips to the customer and had since been returning good dividends on their initial cost. The direct savings of the paper mill from the use of skid platforms rather than cases has worked out to be approximately $5 a ton.

The advantage to the customer is that a car of skidded paper can be unloaded in approximately one-tenth the time required for cased paper. Another advantage is that the skidded paper can be moved directly to the press and so save cost of unpacking and handling.

Conductivity and pH Determinations—The use of electrometric equipment as a means of studying and controlling processes in the pulp and paper industry was suggested by W. N. Greer in his paper on "Conductivity and Hydrogen-Ion Measurements". Conductivity measurements do not appear to be as widely used as do pH measurements, though where applicable they afford a very convenient means of control. An indication of what might be accomplished was given by Mr. Greer and graphs were displayed of conductivity measurements in the process of sulphite cooking as well as in the washing of sulphite and of soda pulp. The instrument used in making the measurements was exhibited and a pH indicator for electrometric determination of hydrogen-ion concentration was also exhibited, the indicator being one designed especially for use with a quinhydrone electrode. A self contained portable potentiometer which can be used with any type of electrodes was also shown and described.

Michigan Safety Congress

Paper Mill Men Hear Addresses on Accident Control and Safety as Viewed by Insurance Company

SAFETY workers from all parts of the state gathered at the Book-Cadillac hotel, Detroit, May 7, 8 and 9, to attend the third annual Michigan Safety Congress, held under the auspices of the Michigan Department of Labor and Industry and the National Safety Council. A general meeting was held Tuesday, May 7th, the two following days being given over to sectional meetings. The Paper and Pulp Section held its sessions the morning and afternoon of May 8, and although the attendance was not so large as had been anticipated, those present contributed generously to the general discussions. Chas. E. Torrance, superintendent of Planning and Personnel of the Bryant Paper Co., Kalamazoo, and chairman of the Paper and Pulp Section, presided at the meetings.

Accident Control

The speaker at the morning session was W. Dean Keefer of the National Safety Council, who gave an interesting, extemporaneous talk on the subject "The Control of Accidents". He discussed to quite an extent the various possible methods which are ordinarily used in attacking the problem of reducing accidents in an industry, and stressed quite strongly the fact that a safety man should have a personality that would win the confidence and support not only of the management, but the employees and mill supervisors as well. He made it very plain that success in any application of accident control depends almost wholly upon the attitude of a concern's management and the degree of support that they give the movement. Second only in importance to this is the support and co-operation received from the superintendents and foremen throughout any institution where safety work is being installed.

An informal round table discussion followed Mr. Keefer's talk, which was very interesting and profitable. Mr. Conibear, safety engineer of the Cleveland Cliff Iron Co., Ishpeming, described in quite some detail their safety experiences, and laid particular stress upon the necessity for good housekeeping in the reduction and prevention of accidents. James F. Hastings, safety director of the Port Huron Sulphite Co., Port Huron, described the safety work which they were just beginning to undertake and the methods they intend to use. Several others took part in the general discussion.

An Insurance Company's View of Safety

The address at the afternoon meeting was given by James A. Purdy, safety director of the Michigan Mutual Liability Company of Detroit, who spoke on the subject "Safety As Seen Through the Eyes of the Insurance Company". Mr. Purdy drew the attention of his hearers by asserting that safety should be common to all classes of business as well as the general public, and it was his belief that the paper industry had not attained the high degree of safety efficiency that should be expected of it. One reason which the speaker gave for expecting a lower accident rate from paper mills is the fact that the paper industry does not represent the hazards that exist in other industries.

The care in selection of new employees was an interesting point made by Mr. Purdy and upon the employment manager he placed a great responsibility for the investigation of the former safety record of each man employed. The habitually careless man with a past accident record should be rejected. Once the employee is found to be a suitable addition to the organization, the responsibility is shifted to the foreman. In closing his remarks, Mr. Purdy dwelt upon the importance of plant housekeeping and reminded his hearers that after all safety was in the final analysis dependent upon co-operation of every unit of the business. It is not one man's job, but every man's job.

Program of Interstate Meeting of the Cost Association of Kalamazoo Valley and the Paper Technologists Club

Kalamazoo, Michigan, May 17 and 18, 1929

FRIDAY, MAY 17th

10:00 A. M. **Registration** . . . No Fee

1:00 P. M. **Luncheon and Joint Session**
. . Harry Bradford, Presiding
Address of Welcome
. . . Mayor E. M. Kennedy
Responses—Cost Association
. . . . N. J. Cowie
Paper Technologists Club
. . . . C. B. Barton, Jr.

2:30 - 5:00 P. M. **Sectional Meetings**

COST SECTION	TECHNICAL SECTION
Geo. K. Ferguson, Chairman	E. F. Whittington, Chairman
"Insurance"—Rep. James M. Wilson.	"Pulp Evaluation and Its Adaptibility to Paper Making"—O. P. Gephart.
"Time as a Cost Factor in the Paper Industry"—T. J. Burke.	"Detection of Starch, Gum, Glue and Casein in Paper"—Dr. Th. Bentzen.

7:00 P. M. **Informal Banquet** N. J. Cowie, Presiding
Toastmaster—E. J. Turner
Music and Entertainment
Speaker—R. B. Wolf

SATURDAY, MAY 18th

8:00 - 11:30 A. M. **Mill Visits or Golf**

12:30 P. M. **Luncheon**
. A. C. Dreshfield, Presiding
"Recent Observations on Scandinavian Pulp Manufacture"
. . Ivar Lundbeck

2:30 P. M. **Sectional Meetings**

COST SECTION	TECHNICAL SECTION
Frank Brown, Chairman	F. D. Libby, Chairman
"Standard Costs"—H. E. Parkman.	"Notes on Analytical Paper Microscopy"—K. P. Geohegan.
"Rejuvenation of Cost Figuring by Means of Time Study Data"—Herbert S. Davy.	"Alpha Pulp"—N. L. Nourse.
Question Box.	Question Box.

6:30 P. M. **Dinner and Joint Meeting**
. . C. B. Barton, Jr., Presiding
Toastmaster—E. G. Milham
Music and Entertainment
Speaker—Dr. John W. Dunning

NOTICE: All meetings will be called promptly. Eastern Standard Time Prevails.

Northern New York Supers Meet

The Fourdrinier and Control Equipment Discussed at Spring Meeting in Watertown, N. Y.

THE members of the Northern New York Division of the American Pulp and Paper Mill Superintendents' Association gathered at Watertown, N. Y., April 27, for the spring meeting which was held at the Hotel Woodruff.

The superintendents were guests at luncheon of M. E. Avery, paper mill supply dealer, just prior to the business session of the afternoon, which convened at 1:30.

Levi Fralick, chairman of the division, presided at the session and before taking up the regular program, introduced C. A. Borden, a representative of the New York Central Lines. Mr. Borden explained that his presence at the meeting was occasioned by the desire of his company to cooperate with the superintendents in the way of furnishing the best possible transportation to the Tenth Annual Convention of the association, June 6, 7 and 8, at Wausau, Wis. Rates and schedules were explained and the members reminded of the importance of obtaining certificates when purchasing tickets.

Paper Mill Control

The opening address on the afternoon's program was given by Sidney E. Meyers of the Merritt Engraving and Sales Co. on the subject, "Practical and Scientific Control in Pulp and Paper Mill Operation." Mr. Meyers confined his remarks to paper mill control. The speaker discussed briefly his association with the Merritt Company as engineer for developing control equipment and spoke particularly of a consistency regulator which is a compact machine of his own invention and design. The theory and operation of the machine was explained and how the resistance of the flow of stock is influenced by consistency. The regulator was said to be rugged and direct acting and could be developed to handle the entire flow of stock in the head box. The initial installation of the device has been made as a caliper control on a board machine and includes a set of indicator lamps for visible indication of condition of operation. The results obtained on the first installation shows the stock held within small limits as compared to former practice.

Mr. Meyers spoke of a second instrument that has been developed to be placed on a beater which is designel to ascertain the quantity of material in the beater by measuring the slush stock as it is admitted.

Another instrument has also been planned for the regulation of a jordan. Mr. Meyers mentioned the faith that he holds in the idea, and hopes soon to have this device developed. He stated that the time has come for more accurate and reliable control with a complete knowledge of physical conditions existing, and made an appeal for the co-operation of the superintendents and those in the industry who would naturally be interested in the line of work he is developing.

At the close of Mr. Meyers' remarks, F. J. Rooney, past national president of the association, stated that the regulator described has been in actual operation for two months in the plant of the Upson Company at Lockport and that it is functioning 100 per cent.

Paper Machinery

C. E. Kinne of the Bagley and Sewall Company, gave a most interesting address on "Paper Machinery," which included a detailed description of the new 304 inch fourdrinier machine just installed by his company at the plant of the Great Lakes Paper Company, Fort William, Ontario. Mr. Kinne's paper is published elsewhere in this issue.

At the conclusion of Mr. Kinne's address, the chairman invited members to ask any questions that might be in their minds, which brought forth a lively discussion of several important subjects. In discussing the life of wires, one member stated that a wire on one of his machines ran continuously for 143 days on forty and fifty pound kraft. Difficulty with black streaks in dryer felts was another subject which drew some suggestions. During the discussion as to the alignment of press rolls, there was a difference of opinion among the superintendents as to the distance off center to obtain best results.

New Uses to Solve Problem of Over-production

Mr. Fred J. Rooney, past national president of the association, spoke on the general conditions in the industry, and pointed out the necessity for a high degree of efficiency among the superintendents. Referring to over-production in the industry, the speaker stated that he did not favor reducing production, that creating new uses and new demands would help the industry more than anything else. Along this line, he pointed out the superintendent's part in this work—although it is not his task to create or discover new uses for paper, it remains for him to produce the quality of paper necessary to meet requirements.

The benefit to be derived from superintendents attending the meetings of the association was stressed and Mr. Rooney felt that any superintendent who had a real problem in his mill, would certainly find an answer to his specific problem at the National Convention.

Safety as Seen Through the Eyes of the Insurance Company[1]

By J. A. PURDY

Director of Safety Michigan Mutual Liability Company

WHEN I was asked by your chairman to prepare a paper for this meeting and talk to you as paper mill employees, and to use as my subject "Safety As Seen Through the Eyes of the Insurance Company" it caused me to do considerable thinking and wondering why people should imagine that the insurance companies see safety in any different light than any other class of business people, because in my opinion safety is something that should be common to all classes of business people as well as the general public. Therefore, seeing safety from the eyes of an insurance company is no different than seeing it through any other kind of eyes. Real safety can only be seen from one angle or viewpoint, that is looking at it straight from the shoulder and square in the face. Usually the facts of safety or lack of safety are always evident, and we can only see through the eyes of the employer and his employee and as much safety as they will produce.

Of course, when speaking of the facts involved, we must always remember there are two sets of facts to be considered; first, we have the facts which show up the good conditions and few accidents; second, we have those which bring forth evidence of bad conditions and many accidents, and either of these facts are produced solely by the attitude of the entire organization, starting from the general manager and running right through to the last man in the organization.

Now, seeing safety is all right, but it has been my experience as well as that of others engaged in safety work, that entirely too much so-called safety is seen and talked, but not near enough done and coming from right down deep in the heart of those who should be actively engaged. Safety work, like every other undertaking, cannot be successful unless the person engaged in the work believes in it and brings it out directly from his heart, because after all is said and done the real analysis of any good work done is originated in the heart and is then telegraphed to the mind, and from there to the hand in order that it might be accomplished. Therefore, any firm desiring to make a success of safety work must have a manager with a heart. He, in turn, must deliver that spirit to the superintendents and foremen and they to the employee in a real convincing manner.

The Insurance Company's Part In Safety

The insurance companies of today, in my opinion, are the most active and greatest safety producing organizations co-operating with industry. I believe this first of all because my long experience with my company, which is no different than others, has convinced me that it has a heart, and this has been so convincingly expressed by our president and his assistants that it has encouraged me in my work, so, our first thought in reducing accidents in the factory or any

[1]Paper read at the Paper and Pulp Section Meeting, Third Annual Michigan Safety Congress, Detroit, Mich., May 8, 1929.

other branch of our safety work is to protect the employee, and make it possible for him to earn the living which the world owes him without having to sacrifice his health and happiness by meeting with some unfortunate accident. Therefore, it is the desire of all insurance companies to assist in bringing about the very best possible conditions in the place of work where a man has to spend the greater part of his time in order that he might make a living in a safe and reasonable way. To accomplish this work, the insurance companies are expending extremely large sums of money each year by engaging the most practical and skillful type of safety engineer it is possible to employ for field service work, and all the necessary expenses involved.

These engineers devote their entire time to the service of employers and employees by making plant inspections, organizing safety committees, holding group meetings of employees, and doing everything within their power in order that they might bring before the people the necessity of greater safety, to assure themselves of more happiness at home and more profitable returns from their employment.

Insurance companies representatives should be welcomed into the midst of any organization with open arms because I believe there is no class of organization that has as great an opportunity of making a thorough study of the accident situation as the insurance companies. We receive reports of accidents of every class and character of industry and employment that there is in the world, and from these reports surely we should be in a position to determine the real cause of all this unnecessary suffering and disappointment and many times complete failure brought about by accident.

Lack of Interest Among the Mills

Safety work in the paper mills need not, and in my opinion is not, any different from that of any other industry except that in nearly every case it should be better than other industries, but unfortunately, for the paper industry and those engaged in it, facts are just the reverse.

Your industry is suffering because of lack of interest in safety, mostly the fault of the employer, and also the lack of knowledge and co-operation by the employee.

Of course, in speaking in such terms, I do not mean to indicate that all paper mills are alike because I can name a number of paper mills where safety prevails and there are few accidents, but taking the industry as a whole you are way behind the times and have failed to keep in step with other large industries.

The paper industry is all right, but the trouble is with the people in it, and the fact of the matter is that the paper industry does not present by far near the hazards that a great many other industries who are working under much greater difficulties than the paper mills. The reason for this is—the other industries have progressed and have kept up with the modern times—they use modern methods of manufacture and handling of material, and insist upon good supervision, and where there are modern methods and proper supervision and co-operation you will find very few accidents.

Your industry is not troubled with high speed and high pressure production conditions that effect such industries as steel corporations, automobile manufacturing, woodworking plants, textile mills and many other such industries. Neither do you have the crowded and congested conditions of any of those industries mentioned, but instead you usually have plenty of space, good light and slow operations, and you do not have piece work to contend with. As a matter of fact, about the only real speedy operation in paper manufacturing is an emergency case when your paper breaks and the machine has to be rethreaded. This, of course, I will admit requires considerable speed and skill, but your records do not show very many accidents having been caused by this operation.

I will also admit some of you and perhaps most of you are handicapped in your plant by the fact that papermaking machines do not wear out very quickly, and, therefore, cannot be replaced often by new, up-to-date equipment. Nevertheless, I feel there is a great deal that could be done but has not been done to improve or correct the conditions that exist about your present equipment. Therefore, you should not offer old style or type of equipment as an alibi as why you cannot eliminate accidents in your plant. On the other hand, you should take the attitude "that the harder the job to be done the harder you must work", so why not give this suggestion your sincere consideration and make your present equipment as safe as possible and feel perfectly satisfied in your own mind that you have gone the very limit in safeguarding your employees from the mechanical hazard of your plant.

Employ Only Safe Workers

After you have done practically everything possible in guarding your machines and having in mind that your equipment is not modern, you must then turn your attention to the necessity of greater care in educating and supervising your help, because in spite of all the mechanical or physical corrections which you make in your plant, the mental condition or education of your help is the most vital and important part of successful safety work, and this educational work must start from the very first contact with the prospective employee. His first lesson must be taught him at the employment department. Too much care cannot be exercised when selecting a new employee. In addition to his physical fitness and his mechanical knowledge.
of the job, you must investigate his reliability, loyalty, and then the most important of all his attitude with regard to the safety of himself and others, and what his record has been in former employment.

In my opinion, the past safety record of a new employee must be very carefully investigated, because many serious accidents can be avoided by refusing employment to a man no matter how skilled a mechanic he may be if he is inclined to be careless and of an indifferent attitude he will sooner or later cause serious injury either to himself or some of his fellow workers, or perhaps even do great damage to some expensive piece of equipment, and further than that, he is not the type of a person that you should bring into the rank and file of your other employees and create an indifferent atmosphere in the plant.

Refusing such a person employment, in my opinion, should not be considered unjust or a hardship upon a man, because I really believe, and I am sincere in this thought, that when you refuse such a person employment in a plant where there is danger of him being injured you are doing him and his family a favor, and you are using the good judgment of which he evidently has no command, and because of his indifferent attitude he should not be permitted to endanger the lives of others.

I claim that your plant is better off without that person, and he is better off without the job until he assures someone he is willing to come into the plant absolutely sold on safety and willing to do his part in promoting the idea.

All new employees while still in the employment office should be thoroughly instructed so far as the employment manager is qualified, in all general shop rules, and these rules should also include the safety rules. Safety rules should not be a separate set of rules by any means, but every function of the safety department must be a part of the general organization in order to keep safety closely connected to all other operations of the company.

The instructions which the new employee receives at the employment office, in my opinion, are necessary and very important. They give the new man the right impression and also start him out right on his job. He receives the impression that the company to which he has sold himself, and that is exactly what he has done, because every man seeking a job is a salesman and is selling what to him is the most precious product in the land, and that is his whole physical and mental makeup. When the employment man is hiring a man he must place himself in the position of the highest type of purchasing agent, and feel that he is purchasing the highest type and most important kind of equipment for his plant, and too much care cannot be taken. The employment man must also make the man feel that he is going to receive the co-operation of the company in making a living under the best possible working conditions, also that he is going to be a part of that organization and it wants him to feel welcome. When the employment man has completed this

very important part of the new employee entering into the organization, who is going to complete the work of making that man a finished product?

Foremen Must Be Safety Teachers

There is only one answer to this question, and that is, "Foremen must take up the responsibility where the employment man has left off". The foreman must see that the man is properly acquainted with his surroundings in the department and that all departmental rules are explained before he is finally placed at his machine or place of work. He must then be properly instructed even though he does claim to be experienced and after he is instructed close supervision must be maintained, because many times a new employee has enough knowledge about a job to pass the employment department and even get by the foreman and still he may not know the first thing about the practical operations of the machine upon which he is going to work, and this many times has been the cause of very serious accidents, simply because the foreman was satisfied in taking matters for granted. There is absolutely no question about safety being entirely up to the foreman after the man has passed the employment department. A good safety record in a department is the result of good supervision by the foreman and good co-operation with the foreman by the employee, and no foreman's job is complete until he has treated safety with the same interest and efficiency as he has treated all production matters within his department.

Plant Inspection and Orderliness

No safety job is a one-man job. It is for everybody, and unless there is absolute co-operation and co-ordination by all it will not be successful. Safety must be a part, and everybody's part of the organization, and must not be treated in a separate manner or as a step-child. Your safety educational program including inspections of the plant, safety committee meetings, keeping of records of your accidents, both as to cause and cost, and the elimination of conditions causing your accidents, all must be a part of the regular operations or running of your plant, and unless it is handled in this manner your safety work will not be successful.

Your inspection work should consist of plant surveys, checking such conditions as exposed gears, belts and pulleys, couplings, extending line shafts, point of operations of machines, housekeeping, handling of material, lights, ventilation, sanitation and the general discipline of the shop. Records of your accidents are also necessary because this is one of the most important factors of all for the elimination of accident causes. Unless your accident records are complete, it will be absolutely impossible for you to determine your accidents and their causes.

The yard about your plant and even the scrap department must not be overlooked and should be kept in an orderly condition. Your ladders, trucks, electrical equipment and all other such equipment must be inspected and kept in first class shape, because records repeat year after year, and prove that at least 80 per cent of all industrial accidents happen because of poor and careless housekeeping and other conditions mentioned in the last two paragraphs.

The education of your employees, last but most important of all, is necessary because after all, the A. B. C. of all safety educational work is good, orderly housekeeping, and where there is good housekeeping there will be found a neat and careful worker, and where we find neat and careful workers we seldom find accidents, whether in the paper mills or any other place of work or living, and when you come right down to it your work is your living, and living now days is work, so let's all do our part in making as much safety for ourselves and others as is possible, and make one combined effort in lifting the paper industry out of the rut in which it now is and has been for a number of years until it has its proper place among modern up-to-date industries from a safety standpoint.

The Sullivan Machinery Company, Chicago, has moved its general offices from 122 South Michigan Ave., to 400 North Michigan Avenue, the 7th and 8th floors of the Wrigley Bldg.

High Cost of Distribution

At the monthly meeting of the New York Chapter, National Association of Cost Accountants, on April 9, B. G. Smith, comptroller of E. R. Squibb & Sons, said that the cost of distribution and selling in industry was too high and should be reduced for the benefit of both manufacturer and consumer. He averred that wasteful methods employed both by wholesalers and retailers made distribution costs much higher than they should be.

Mr. Smith gave figures to show that in the case of one large concern, not his own, 62½ per cent of the consumer's dollar goes into the cost of distribution, selling, etc., in one form or another and only 37½ per cent goes to the manufacturer. In this case it cost the concern nearly twice as much to distribute and sell the goods as it did to manufacture them.

One source of waste was the canvassing of the retail trade by representatives of wholesale merchants when the manufacturers' salesmen already covered the same ground. Another element of waste consists of the overlapping of territory covered both by competing and noncompeting wholesalers. Mr. Smith suggested that such a condition could be corrected by wholesalers confining their activities solely to warehousing and shipping. Many of them could then consolidate and organize themselves into regional chains and a substantial amount of waste and duplication of effort would be eliminated. Hundreds of manufacturers who now warehouse their own merchandise would then find it cheaper to use a specialist. The same scientific principles now applied to mass production could then be applied to distribution of the product.

With regard to the manufacturer's side of the story, Mr. Smith said that advertising had undoubtedly been one of the principal factors if not indeed the most important one, in the scheme of distribution, which had made mass production possible. Expenditures for this purpose required careful study.

As an instance of curtailing of advertising expenditures, it is clear that if the manufacturer who does not have national distribution but buys space in the newspaper having, say, 5 per cent circulation in Canada where he has no distribution, he knows at once that he is wasting 5 per cent of his expenditure. The manufacturer should determine in advance exactly what he is buying in the way of circulation and use publishers' statistics wherever possible to gauge the results of his expenditures.

Mr. Smith is a thorough believer in advertising. Wasteful expenditures on this should, however, be cut out and he showed how this could be done.

Mr. Smith's remarks also covered such matters as branch office operating costs, salesmen's quotas, curtailment of shipping expenses, freight, etc. With regard to freight, he said that the cheapest rout was not always the most economical, and neither was the shortest route always the quickest. Time in transit, adequate warehousing, local shipping facilities and other factors must be kept continually co-ordinated with the financial investment in field inventories, sales policy and many other factors of distribution involved in merchandise.

Paper Mill Research Specialist Wins Simonds Award

Robert F. Elder, Specialist in Market Research, has been awarded the Alvan T. Simonds award of one thousand dollars for the best essay on "Reducing the Costs of Distribution" for the year 1928, according to announcement made by the American Management Association, which conducted the competition.

Mr. Elder is a graduate of Harvard University and specialist in marketing research for the Brown Company of Berlin, N. H.

Honorable mention was awarded to Ray M. Hudson, Assistant Director, Bureau of Standards, Department of Commerce, Washington, D. C.

The judges were: Dr. Fred E. Clark, professor of marketing, Northwestern University; Dr. Donald Cowan, Swift & Company and E. E. Ames, vice president and director of sales, General Box Company.

The New 304 Inch Paper Machine[1]

Description of the World's Widest Fourdrinier Machine, Installed at Great Lakes Paper Co., Ltd., Fort William, Ont.

By C. E. KINNE

The Bagley & Sewall Co., Watertown, N. Y.

IN THE present age of rapid advancement any machine or building that is considered large, is soon surpassed by something larger.

When the Deferiet Mill of the St. Regis Paper Co. was started in 1902, it was considered the largest and most modern mill ever built. It had four paper making machines, one of them 145" wide and they were to run at 500 feet per minute. The speed of 600 feet per minute was then considered the extreme limit. The owners of the new mill told the officials of the Bagley and Sewall Company "that if the four machines would produce an average of 100 tons of newspaper per day, they would be perfectly satisfied." The four machines did produce 100 tons of paper a day, and before the mill had been running five years, the same machines were producing over 150 tons a day.

In 1903, The Bagley and Sewall Company put its first 163" machine in operation. This machine was considered a marvel, and was the widest machine in the world for several years.

You are all probably familiar with the 204" machine at the mill of The Algonquin Paper Corp., at Ogdensburg, N. Y. This machine runs about 850 feet per minute, and according to an article which appeared in the trade press January, 1929, it produced 30,953 tons of paper in 1928, or an average of over 100 tons for every working day in the year.

This is a striking contrast, and shows the progress made in 26 years, when we consider that in 1902 it required a four machine mill to make 100 tons a day, while in 1928, one machine produced 100 tons a day.

The 264" Bagley and Sewall machine at the Great Lakes Paper Co., Fort William, Ontario, at 945 feet per minute, produced 151 tons 340 pounds in 24 hours. This machine is now running over 1000 feet per minute and producing over 160 tons of paper a day.

Description of 304" Machine

During the past year the Bagley and Sewall Company has built and installed and widest fourdrinier paper making machine ever built. This machine has a wire 304" wide, and is designed to run 1500 feet per minute. This machine has many new features, and in the designing and building of it many engineering problems had to be worked out.

On account of its great size and weight many changes had to be made in our foundry and machine shop in order to handle these heavy parts.

The general outline specification of the 304" machine is as follows:—

Wire 90 ft. long by 304" wide. The wire part does not shake.

Removable wire part, built under the Beloit patents. The wire part fitted with the Wentz no-deckle arrangement. A Bagley and Sewall Adjustable Lip Slice, 60" high. Table rolls of cast bronze, 12" diameter, carried in Timken roller bearings, mounted on top of the side bars. Breast roll 28" diameter, with bronze shell. Wire rolls, cast bronze, 18" diameter. Guide roll, cast bronze, 18" diameter. The breast roll, table rolls, wire rolls and guide roll are all carried on Timken roller bearings.

Bronze suction couch roll, 44" diameter, shell 1½" thick. This roll weighs 26 tons.

On top of the suction roll is mounted a rubber covered presser roll.

Six manganese bronze suction boxes, with maple covers.

One copper save-all at the breast roll, then a water-tight pit under the balance of the wire part.

Press Part:

The first press has a 38" diameter suction press roll, which weighs 24 tons.

A 26" diameter granite roll is placed on top of the suction press roll.

The second and third bottom press rolls are 38" diameter, rubber covered, with 30" diameter top granite rolls.

Each rubber covered bottom roll weighs 23 tons.

All press roll bearings have bronze linings, with special self-aligning features, and are ring-oiling and water-cooled. The press felt rolls are of heavy steel pipe, turned smooth, then rubber covered to 18" diameter.

Each press felt stretcher is operated by a 3 hp. electric motor.

Dryer part:

There are 48 dryers, each 60" diameter by 302" face.

Four felt dryers 48" diameter, and one 36" receiving dryer.

The 60" dryers are bored inside.

All dryers are highly polished on the surface, and every journal and gear-fit are ground to exact size.

All dryers are within .005" of the same diameter.

All dryers are carried in Timken roller bearings.

The 60" dryers weigh 13 tons each. In our shop tests, these dryers were run at a speed of 115 revolutions per minute, which gives a surface speed of 1800 feet. The power was then thrown off, and the dryers would "coast" eleven minutes before stopping. This shows how well the dryers are balanced and how easy they run on roller bearings.

The dryer gears are a special feature. The gears are only about one-half of the diameter of the dryers, and are completely enclosed, leaving the driving side of the machine open, so the "broke" can be blown out with an air-hose, without danger of the "broke" getting into the dryer gears. The gear teeth are accurately cut on a Maag gear generating machine, and are noiseless at high speeds.

A special type of roller bearing packing box is used on the dryer, with a syphon pipe. The position of the syphon pipe can be moved by a handle so as to bring the pipe to any position in the dryer where the water accumulates. Expansion joints are in each vertical pipe, so that the packing box is not crowded out of its proper position.

The dryers are fitted with the Sheahan Automatic Paper Carrier, taking the sheet through the third press.

Calenders:

There is one 8-roll stack of calenders.

The bottom roll is solid, 36" diameter by 298" face, and weighs 51 tons. The journal of this roll is 28" diameter by 42" long.

The next roll is 24" diameter, and weighs 20 tons.

The next six rolls are 20" diameter and weigh 13 tons each.

The total weight of the calender rolls alone is 150 tons.

Due to this enormous weight on the bottom bearings, it is necessary to have an oil pump to raise a pressure to lift the bottom journals from their seats, when starting these rolls in motion.

The top and intermediate roll bearings are lined with bronze and are ring-oiling.

The bottom bearings are lined with babbitt.

The calender rolls are raised by an electric motor of 20 horse power capacity.

Reel:

The reel is of the uniform speed type, having a drum 42" diameter, carried in roller bearings. The unwinder has a special water-cooled braking arrangement.

Winder:

The high speed two drum winder has drums 18" diameter. A special feature of this winder is that the wound rolls of paper are put on the floor by an automatic arrangement operated by electric motors, so that air or electric hoists are not necessary.

At a paper speed of 3000 feet per minute there is absolutely no vibration to the drums. The winder is driven by a 75 horse power motor.

Electric Drive:

The various parts of the machine are connected to electric motors, the rated capacities as follows:—

The suction couch roll 225 hp.

[1]Paper read before the American Pulp and Paper Mill Superintendents Association at Watertown, N. Y., April 27, 1929.

The presses 100 hp. each.

The dryers, two motors of 325 hp. each.

The calenders, 275 hp.

When the dryer part was turned over by power the first time, it required but 43 hp. to start them, and the starting torque was the same as the running torque. This proves the efficiency of the roller bearings and of the smooth rolling action of the gear teeth.

Size of Machine:

This machine is 296 feet long by 53 feet wide.

The weight of the machine is about 2100 tons, and it required 82 freight cars to transport it.

Capacity of Machine:

As this machine is not yet in operation, it is too early to predict what production may be expected from it, but if it performs as well in proportion as the 264" machine, after it gets up to speed, it will probably produce well over 200 tons of paper a day.

Conclusion:

When the writer began work with the Bagley and Sewall Company in 1893 (36 years ago), they were then building a machine 122" wide, which was for some years after the widest machine in the United States. This machine was to run 300 feet per minute.

He has since seen the sizes and speeds increase until this 304" machine has been built, which is intended to ultimately operate at 1500 feet per minute.

How much wider will machines be built in the future, and how fast will they run?

New Control Equipment for Industry

For a number of years the Merritt Engineering and Sales Company, Inc. have manufactured a line of veneer and plywood machinery. This line had its origin in the old Bailey and Vail Co. of Lockport, N. Y. which was founded in 1851. The business of the Bailey and Vail Co. was taken over by I. E. Merritt in 1882. During all the intervening years, the organization has been closely associated with the wood-using industries, and only recently has become identified

with the pulp and paper industry. The first association with the pulp and paper industry was in the design and construction of a special dryer installation for the plant of the Wood Conversion Co. at Cloquet, Minn. This dryer was actually a development of the veneer dryer and it has now been in successful operation for some time. In fact, plans are now under way to extend the dryer installation to double its present capacity.

A few months ago S. E. Meyers joined the staff of the Merritt Engineering and Sales Co. to develop control apparatus for the pulp and paper industry. Immediately before associating himself with the Merritt organization, Mr. Meyers was associated with the Cornell Wood Products Co. at Cornell, Wis. in the capacity of plant engineer. Previous to his association with the Cornell Wood Products Co., he was associated with the Robert Gair Co. at Tonawanda, N. Y. Such experience as Mr. Meyers had obtained from his contact with the pulp and paper industry indicated to him the necessity of proper control of the various operations involved in the production of pulp and paper. Appreciating the practical side of papermaking as well as the technical side, has made it possible, up to the present, for Mr. Meyers to develop a consistency regulator, a beater control system, and a distributing roll for cylinder machines. The consistency regulator has been designed for installation at any point in the plant where consistency regulation is desirable. One of these devices has been installed in the plant of the Upson Co. at Lockport, N. Y. where it is functioning very satisfactorily.

New Texas Gulf Sulphur Plant

The Texas Gulf Sulphur Company has begun to tap a new source of sulphur at Newgulf, Texas, on the Boling dome, some forty miles north of the Texas Gulf Sulphur Company's property at Gulf from which the company now produces in excess of 1,000,000 tons of sulphur a year.

The town of Newgulf is connected with the Southern Pacific Railroad and the Santa Fe Railroad is now engaged in building a connecting link. Preliminary drillings indicate that the deposit at Newgulf contains several times as much sulphur as the deposit in the Big Hill dome at Gulf. The exploratory drilling involved the sinking of about 250 wells, of depths varying from 500 to 2,000 ft. The sulphur will be extracted by the Frasch process. A pumping station has been already erected on the river bank having a capacity of 40,000 g.p.m. and capable of working against a 65-ft. head, which is in excess of plant requirements, but will enable the pumping station to take advantage of the seasonal variation in the supply of water. Part of the water required for operation is converted into steam, which is then used to superheat the remaining water required for extraction of the sulphur and for supplying the steam lines used to keep the sulphur flowing from the wells in a molten state until it can be delivered to the vats for storage.

To generate the large amount of steam required to heat the water a power house containing five 1,500-hp. boilers of the water-cooled type has been erected. Natural gas is available as fuel for operation of the plant, but fuel oil may also be burned. The power house was erected by the J. G. White Engineering Company, of New York.

The Joint Committee on Approved Pulp Testing Chemists, of which Major O. M. Porter of the American Paper and Pulp Association is also secretary, has just had occasion to caution its approved chemists in the matter of the exercise of care to remove all portions of bits or knives which may have been broken off in the sampling of wood pulp, with the view to preventing any possible damage which might result to attendants, pumps, machinery, etc., should these steel particles get into the beater. The Joint Committee is making every effort to insure a high and uniform standard of pulp weighing, sampling and testing.

Cutler-Hammer, Inc., Announces Cleveland Stock

To provide facilities better to serve its increased trade in the east central states, Cutler-Hammer, Inc., Milwaukee, Wis., announce the establishment of a warehouse at Cleveland, Ohio. The company has leased 1600 square feet of floor space for the storage of stock for quick deliveries. A complete line of standard motor control equipment and wiring devices will be available for immediate shipment.

The territory to be served by these new facilities includes Cutler-Hammer's entire central sales district consisting of the states of Ohio and West Virginia, the province of Ontario, western New York and Pennsylvania and sections of Maryland, Indiana, Tennessee and Kentucky. Sales offices for the district are located in Cleveland, Cincinnati, Buffalo and Pittsburgh.

Superintendents' Convention Program

Papers and Entertainments Provided for Tenth Annual Convention of American Pulp and Paper Mill Superintendents' Association at Wausau, Wisconsin, June 6, 7, and 8, 1929

Registration

The Registration Bureau, which will be located in the main lobby of the Hotel Wausau, will be open at 8:00 A. M. on Wednesday, June 5th, and continue until Friday evening.

THURSDAY MORNING, JUNE 6th

9:30—Assembly, Elks Auditorium
Convention called to order..R. H. Kelly, Chairman
In Memoriam.....President, B. T. Larrabee
Invocation.....Rev. F. J. Turner
(Pastor Methodist Church)
Address of Welcome.....Hon. A. V. Gearhart
(Mayor of Wausau)
Response .....Wm. Brydges
President's Message.....President B. T. Larrabee
Committee Appointments
10:45—Address.....D. C. Everest
(General Manager, Marathon Paper Mills Co.)
11:00—"Common Sense Engineering"...A. E. Broughton
(Healy-Ruff Company, St. Paul, Minn.)
11:50—"The Continuous Weighing Scale"..E. G. Thomas
(Toledo Scale Company, Toledo, Ohio)
12:45—Special Announcements
1:00—Adjournment
1:00-2:00—Luncheon at Hotel Wausau

Thursday Evening

7:00—Joint banquet of ladies and gentlemen at Rothschild park pavilion. (Cars leave Hotel Wausau at 6:30)
Toastmaster .....D. C. Everest
Group singing led by W. Del Curtis
Presentation of medals to Past Presidents
.....W. L. Edmonds
(General Manager, Wausau Paper Mills Company)
Address .....Douglas Malloch
(Poet, Author and Humorist of Chicago)
Orchestral Selections .....'Kelly's Kittens"
Special entertainment from Chicago
Dancing; also typical North Woods Diversions; Card games for those who do not wish to dance.

FRIDAY MORNING, JUNE 7th

9:30—Assemble at the Elks' Auditorium
"The Economical Operation of Pulp and Paper Mills" .....Jos. H. Slater
(General Manager, Escanaba Paper Co., Escanaba, Mich.)
10:00—"The Advance of the Modern Paper Machine"
G. A. Macklen (Vice-Pres., Beloit Iron Works)
10:40—Association Meeting
Election of Officers
Report of Mill Service Committee—K. E. Terry, Chairman
11:20—"Perfect Pulp and Paper Mill Control".....
.....E. C. Gildenzopf
(Congoleum-Nairn Co., Asbestos, Md.)
12:00—"Slime Problem in Pulp and Paper Mills"....
D. K. Pattillo (The Mathieson Alkali Works)
12:30—"Size and Alum Problems Met in the Field"
.....C. E. Mueller
(Paper Makers Chemical Company, Kalamazoo, Mich.)
1:00—Adjournment
1:00-2:00—Luncheon at Elks' Club
2:30 to 5:00—Visitation of Plants in the Wisconsin Valley. Plans for visiting other Wisconsin mills will be announced at the morning session. Guides and transportation to Wisconsin Valley mills will be furnished by Transportation Committee.

Friday Evening

7:00—Men's banquet at the Elks' Auditorium
Toastmaster .....F. C. Boyce
"Father of the Association"
Short talks by the Officers of the Parent Association and Affiliated Organizations
Special Entertainment from Chicago
Special Music, Vaudeville, etc.
10:00—Ladies will join men at Elk's Auditorium and balance of evening will be spent in dancing.

SATURDAY MORNING, JUNE 8th

9:30—Assemble at Elks' Auditorium
"Technical Control of Pulp and Paper Mills"
Allen Abrams (Marathon Paper Mills Company)
10:10—"Jobber's and Printers' Problems Traced to the Paper Mill".....Ronald Drake
(W. F. Hall Printing Co., Chicago, Ill.)
11:00—Meeting open to discuss subjects which have been suggested by members during the convention.

Questionnaire

Have you any problem that you would like to have discussed in open session?

If so, please state what they are and hand to General Chairman or Chairman of Program and Arrangements Committee before Friday noon. It is not necessary to sign your name.

LADIES' PROGRAM

The Registration Bureau, which will be located in the Main Lobby of the Hotel Wausau, will be open at 8 A. M. on Wednesday, June 5th, and remain open until Friday evening.

Program for Thursday

11:00 A. M.—The ladies' party will leave the Hotel Wausau for a trip to the Wausau Country Club where luncheon will be served at noon. The afternoon will be spent in Golf, Cards, Airplane trips as you desire. Ladies will return to Hotel Wausau at 5:00 P. M. to allow time to prepare for Joint banquet at 7:00 P. M.
7:00 P. M.—Joint banquet and dance at the Rothschild Park Pavilion. Typical north woods entertainment between Banquet and Dance.

Program for Friday

9:30 A. M.—The ladies' party will leave the Hotel Wausau via auto to the north woods of Wisconsin through the beautiful Wisconsin River Valley. The final stopping place will be "Essex Lodge," which is located on Clear Lake, about five miles north of Tomahawk. This is known as one of the finest resorts in the State. Luncheon will be served here and the afternoon spent in swimming, fishing, golf, horseback riding, boating, etc. The party will leave "Essex Lodge" in time to arrive in Wausau at 5:30 P. M.
6:15 P. M.—Ladies' banquet at the Wausau City Club with entertainment features.
8:00 P. M.—Theatre party at the Grand Theatre.
10:00 P. M.—Join men at Elks' Auditorium for dancing.

Program for Saturday

Ladies program for Saturday will be announced at the Friday night banquet.

Note: During the convention, special trips will be arranged upon request and all transportation furnished.

West Virginia Pulp and Paper Company Completes New Construction

THE West Virginia Pulp & Paper Company recently completed an extensive reconstruction program involving the modernization and expansion of cutting and finishing departments and shipping facilities at its plant at Mechanicville, N. Y. This mill, like many others, was faced with a problem brought about by changed selling conditions whereby orders are placed for shipment direct to the consumer and the burden of storage placed by the jobbers almost entirely on the mill—thus requiring appreciably increased storage and shipping space.

At the Mechanicville plant, cutting, finishing, storage and shipping have been housed in an area approximately 357' long by 150' wide, this area being completely covered by a structure which was in reality seven connected buildings of varying types of construction, all one-story and basement, and separated only by party walls. Five of these structures occupied the west half of the area and housed the storage of mill supplies as well as the box shop in the basements, while the first story was occupied by rewinding and the storage of finished products. The two structures comprising the east half housed pipe shop and machine shop in the basement while the first floor was given over to cutting and finishing.

The Morton C. Tuttle Company of Boston was commissioned to analyze the problem and submit recommendations as to the most economical solution. Studies were made of various schemes which would give relief from the congested conditions existing. The location of this section of the mill was such that lateral expansion was possible only in one direction; namely, to the south. The studies showed a choice to lie between one story reconstruction on the existing area (which was necessary in any event) and expansion in added one-story construction, and the construction of a new two-story building on the existing site. The figures showed that as a matter of investment the two-story structure was the most economical and this scheme was accepted and developed. This included the retention of the basement area without change, giving over the entire new first floor area to storage and shipping, with cutting and finishing housed in the added second floor area.

Under this scheme the paper in rolls is delivered from the rewinders on the first floor to brick wells extending into the first story of the new construction and is lifted to the second floor level by a crane running the full length of the building. At the second floor, roll storage is provided along the walls directly behind a single row of cutters extending the length of the building. From the cutters the paper passes directly to the finishing benches. The finished paper reaches the first floor storage and shipping area by means of a 15-ton elevator with 14' x 16' platform which operates between the first and second floor only. This elevator acts as so much storage space and remains at the second floor level until fully loaded. A smaller elevator of 6-ton capacity runs from the basement to the second floor and is used for miscellaneous purposes.

In the roof of the new construction three lines of sawteeth run longitudinally and give special lighting. A feature of the new design is a conveyor running under the second floor with openings at each cutting machine. This conveyor takes the broke and trim from all the cutters, delivering it directly to an automatic beater, located in the basement, from which the stock is pumped back to the machine room.

The old shipping facilities, which are retained, included a 3' platform at the west end of the building with a siding providing for only three cars. In the new design a train shed was constructed along the south side of the building, housing a 12' shipping platform and a siding which gives a capacity of eight cars. The second floor was extended over this train shed to give just so much more area in the finishing department above.

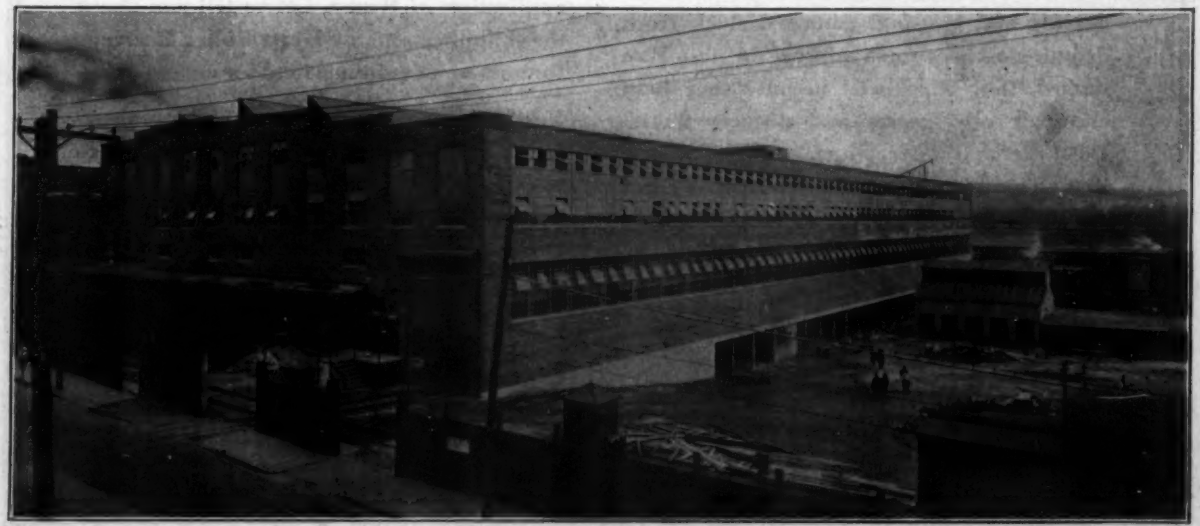
The construction of this work involved a great deal of difficulty owing to the requirement that none of the operations could be discontinued or disturbed. Accordingly the construction was planned to be carried out in two halves; first constructing the west half through and over the existing construction and, after cutting and finishing had been moved into this half, tearing down the east section and completing the building. By careful construction, planned with particular attention to dust prevention and weather tightness, the work was carried out as scheduled with no interference whatever to operations. Cutting and finishing epartments were moved into the completed first half of the new building over a week-end so that lost time was negligible. In the reconstruction of the east half, the pipe shop and machine shop were kept in operation in the basement while the superstructure was being erected overhead.

This construction, as completed, is working out fully up to expectations and with marked increase in efficiency and decrease in handling and movement of finished goods.

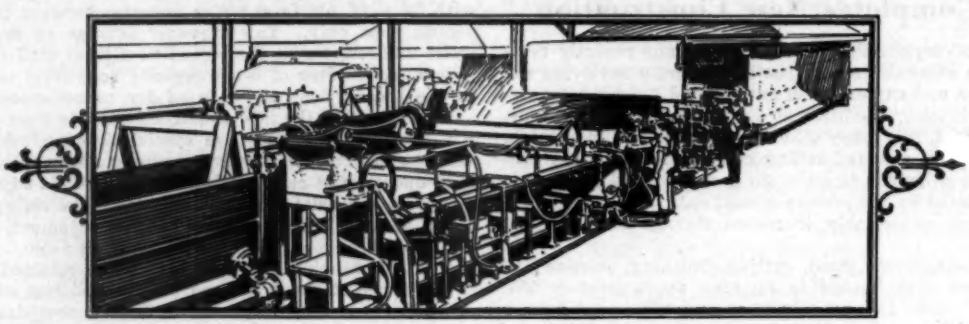
The development, including study, design and construction, was carried out by the Morton C. Tuttle Company of Boston.

Hammermill Paper Co., Erie, Pa., announces the appointment of Chas. A. Esty Paper Co. Div., Worchester, Mass., as one of its agents.

The Diamond Alkali Company, Pittsburgh, Pa., announces the removal of its offices to 436 Seventh Avenue, Pittsburgh.



New structure housing the cutting, finishing, storage and shipping departments of the West Virginia Pulp and Paper Company, Mechanicville, N. Y.



NOT many years ago anti-friction bearings were considered as "gadgets" when applied to pulp and paper making machinery. Today the widespread use of Hyatt Roller Bearings in this industry is a striking testimonial of their ability to perform satisfactorily, to save power and maintenance, and to definitely benefit the machine in which they are mounted.

The fact that so many pulp and paper manufacturers are now employing Hyatts as standard equipment in their various machines, is proof of the fact that the Hyatt bearing is peculiarly suited for this use.

Hyatt Roller Bearings, on account of their three or two part construction, are easily assembled in the machine, and very readily dissembled if the need ever arises. They have generous load capacities, because of large load-carrying surfaces.

They need be lubricated only infrequently, and because the oil or grease stays inside the bearing and housing, damaged stock from dripping oil becomes a thing of the past. Fire hazard, too, is reduced because they help eliminate oily, greasy and slippery floors. Dust, dirt and water, which ruin many bearings in pulp and paper machinery, do not affect Hyatts as adversely as other kinds of bearings. The distinctive Hyatt roller assembly was purposely designed to combat these destructive elements.

Hyatt bearings prevent machine wear, sticking bearings, and stoppage of production because they do not wear appreciably even after many years of service. This means that machine parts are held in the same position and relation to other parts, as when the machine was new.

Because machines equipped with Hyatt bearings are not stopped for bearing repair, and because they enable a machine to start and run easier, production is increased.

We have prepared many designs of Hyatt Roller Bearings as applied to practically every kind of pulp and paper making equipment. Undoubtedly a machine similar to one where you may now be having trouble with old fashioned bearings has been remedied by the application of Hyatts. Let us tell you about these applications of Hyatt Roller Bearings for both new equipment and for changeovers.

You obligate yourself in no way by requesting this data or the services of our engineers to call and make unbiased recommendations and furnish bearing advice.

HYATT ROLLER BEARING COMPANY NEWARK DETROIT CHICAGO PITTSBURGH OAKLAND

HYATT
ROLLER BEARINGS
PRODUCT OF GENERAL MOTORS

When purchasing new equipment—specify Hyatt Roller Bearings.

V-Belt Drives Coming Into Widespread Use

In the last few years there has been a considerable development in the use of elastic V-shaped belts in multiple. Such drives are applicable to almost any type of service and their use has solved many baffling power transmission problems.

One of the interesting advantages of this type of drive is that very short centers are possible so that minimum floor

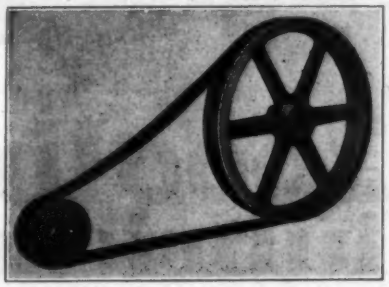


Fig. 1—A set of sheaves and belts for a typical V-belt drive

space is required for a drive. It is also possible to increase speed ratios and use higher speed motors. The efficiency of the V-belt drive is said to have been shown on numerous tests to be 98 per cent or better.

The V-belt has flexibility and the driven machine is thereby protected against breakage by sudden stoppage or shocks. It operates silently and eliminates vibration. No belt dressing or lubrication of any kind is required for this type of drive. The V-belt drive, therefore, requires practically no attention and the maintenance cost is low.

With a drive of the V-belt type, bearing pressures are greatly reduced. This is made possible by the fact that much higher belt speeds can be used and by the fact that due to the wedging action of the belts in the grooves there is practically no tension on the return side of the V-belt. The total belt tension in the V-belt drive while running is practically equal to the driving tension.

V-belts are available for transmitting power from a fraction of a horsepower up to two hundred and more horsepower and they may be used for either reducing or increasing speeds. In nearly all cases it is possible to secure them

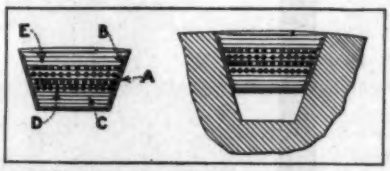


Fig. 2—Drive belts are built up of duck, shown at A and B. Special compounded rubber (C and E) and layers of cords shown at D

for any required center distances. This is made possible by the large selection of standard belt length in which these endless belts are available.

One of the most recent developments in V-belt drives is known as the Flex-Mor drive, which is a product of Fairbanks, Morse & Company of Chicago. The new drive is the result of numerous field and dynamometer tests to determine the factors of belt angles, slippage, the life of belts of various constructions, character of the various materials entering into the drive, and power capacity.

The belts which are used with this drive are built up of an outer belt jacket of duck which has been treated with rubber to improve its wearing qualities. As shown in the accompanying illustration, this jacket consists of two layers of duck enclosing a core made up of a layer of rubber, several layers of rubber-embedded cords, and another layer of rubber above the cords. The layer of rubber below the cords is specially compounded to withstand repeated compression, while the layer of rubber above the cords is specially compounded to withstand repeated tension. The rubber-embedded cords are laid at the neutral axis of the belt where there is the least tension or compression. These cords are made of long staple cotton and the construction is quite similar to that which is used in cord tires. The various

Fig. 3—A short center vertical drive, one of the most difficult belt drive problems, is solved with multiple V-belts

elements of the belt are assembled in the mold and vulcanized together into a unified structure.

The sheaves are made of semi-steel and have been designed with particular reference to the angle and depth of the grooves so that the belt slippage is a minimum. At the same time the relation between the angles of the belt sides and the grooves are such that the belt makes a gradual contact with the grooves as it bends around the sheaves. Due to the wedging action of the belts in the grooves and to their inherent elastic qualities, there is no sudden grabbing of the load and sudden shocks to the driving and driven machines are eliminated.

Many Paper Mills Order New Equipment

Many paper mills are expanding and bringing their equipment up-to-date by installing new filters, calenders and other machinery.

The Norwood Engineering Company, Florence, Mass., has recently installed its finishing machinery in a large number of mills. These installations include: filter plants at Stevens & Thompson Paper Co., N. Hoosick, N. Y.; Smith Paper Co., Lenoxdale, Mass.; John A. Manning Paper Co., Green Island, N. Y. and super calenders for Smith Paper Co., Lee, Mass. This company also reports gravity filter plants in process for Bartgis Bros., Ilchester, Md., and Eastern Mfg. Co., Me., also South Brewer, Me. Orders are on hand for three glassine calenders for the Warren Mfg. Co., Milford, N. J., a super calender complete for electric drive for the Millers Falls Paper Co., Millers Falls, Mass., and two special super calenders with electric drive for the Columbia Mill of the Smith Paper Company.

Robbins & Myers Announce Hoist and Crane Div.

Robbins & Meyers, Inc., Springfield, Ohio, manufacturers of electric motors, motor-generator sets and electric fans, announce a new division—a complete new line of electric and hand power cranes, hoists and trolleys up to 10 ton capacity.

The executive, technical and sales personnel of the division were all formerly associated with the Chisholm-Moore Mfg. Co. of Cleveland in similar capacities. Frank F. Seaman has been appointed general manager, and Carl E. Schirmer chief engineer of the new division.

2000 lbs. lubricant pressure *at the touch of a finger!*

The lubricant *prevents* leaks and keeps the valve from sticking

A slight turn of the lubricant screw on the Nordstrom Valve produces hydraulic pressure up to 2,000 pounds per square inch. This pressure forces lubricant around the plug, positively preventing leaks and entry of foreign matter.

The same operation automatically exerts upward pressure on the plug and releases it should it ever become tight.

Whether operated once or a thousand times, Nordstrom Valves won't leak and are easy to turn.

Nordstrom Valves are manufactured in various types depending upon the size of the valve and the sevice for which they are intended. All, however, have the efficient and patented Nordstrom method of lubrication.

Services in the Paper Industry

Handling black and green liquors, in diffusor rooms, recovery and mixing rooms, ground wood plants, filter installations on both feed and vacuum lines and bleach liquors, alum, etc.

Our new Catalog No. 6, fully illustrates and describes the advantages of Nordstrom Valves for use in the Paper Industry.
Ask for it!

Merco Nordstrom Valve Company

Subsidiary of The Merrill Company

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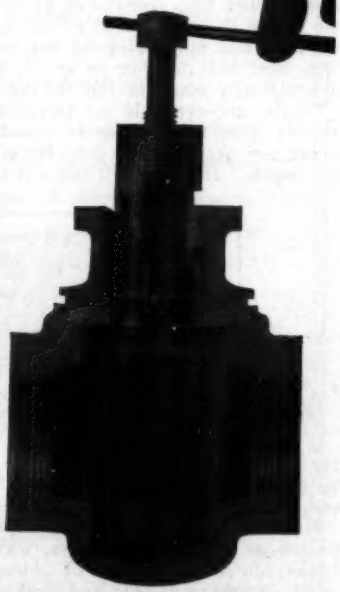


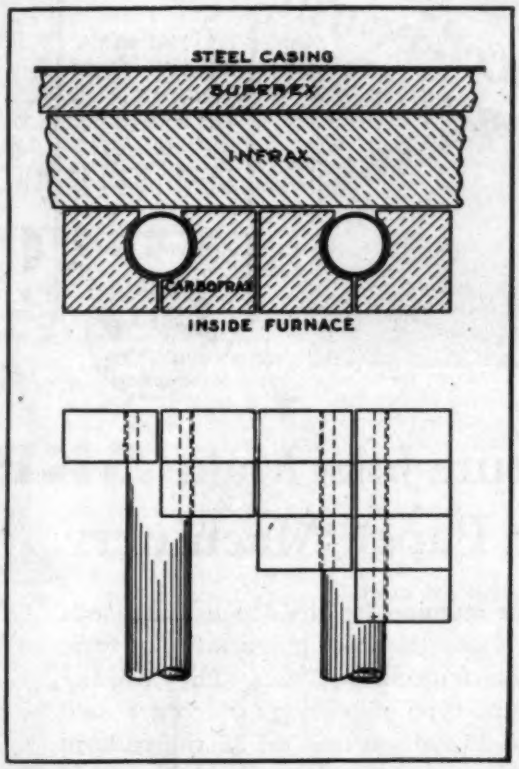
"Merco" Lubricants used in Nordstrom Valves are available in many types and are suitable for a wide range of valve services.

Nordstrom *Valves*

The Seymour-Carbofrax Furnace

It is evident that a refractory lined furnace is a hot furnace and that it encourages and accelerates combustion and is desirable. The difficulties with a hot furnace consist, first, in keeping the refractories below destructive temperatures; and second, in keeping combustion and furnace wall temperatures below the point at which slagging will introduce difficulties in handling the ash.

The Seymour-Carbofrax Water Cooled Furnace, a joint product of the Erie City Iron Works, of Erie, Pa., and The Carborundum Company, of Niagara Falls, N. Y., has met



these difficulties by using water cooling tubes in the walls, reducing their temperatures just sufficiently to insure durability and convenient handling of the ash. The result is that all the advantages of a hot furnace are maintained, the disadvantages of the cold furnace are avoided, and the difficulties previously found in the hot furnace are obviated.

High speed combustion and high boiler ratings should result in reduced first cost, conservation of space, lower labor costs per horsepower developed, and greater flexibility and operating range. In order to be applicable to industrial power plants, all these specifications must be met. The significance of the development of the Seymour-Carbofrax Furnace lies in the fact that it is said to meet all four of these demands, and so makes available to the industrial plant economies which have been previously generally restricted to central station practice.

The construction of this furnace is exceedingly simple, as may be seen in the illustration, being composed of ordinary boiler tubes over which are slipped the small Carbofrax shapes. A minimum of labor is required in the fabrication and the assembling of the parts, resulting in a comparatively inexpensive wall, the cost per horsepower being further reduced by the higher speed at which the furnace may be operated.

Conservation of space and lower labor costs per horsepower result automatically from the increased output per unit, as the furnace and boiler require no more space or attention than a similar low rating unit operating at half the output.

Clements-White Trading Company

William B. Clements and John J. White, of Holyoke, Mass., have formed a partnership to deal in paper mill supplies, such as wires, felts, leather and rubber belting, beater bars, knives of all kinds and chemicals. Rags, paper stock, clay and coal will be offered by special arrangement from time to time.

Mr. Clements is well and favorably known in mills throughout the Connecticut valley as former chairman of the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association. He was for many years connected with the American Writing Paper Company and recently resigned as assistant general superintendent of the Fitchburg Paper Company mills at Fitchburg, Mass.

"Jack" White, as John J. White is known to everyone in the New England territory, has been identified with the paper industry practically all his life and is a former mayor of Holyoke. He was one of the chief organizers of the Connecticut Valley Division of the Superintendents' Association and its first chairman. He is in great demand as toastmaster at all trade banquets and is undoubtedly one of the best known men to the paper trade in the country.

Charles E. Carpenter

Charles E. Carpenter, manufacturer, philosopher, engineer, philanthropist, editor of The Houghton Line, and president of E. F. Houghton & Company, died at Miami Beach, Florida, April 6, 1929, in his 67th year.

Mr. Carpenter was a man of deep convictions and indomitable courage. He was endowed with a powerful personality and was widely known as an able public speaker and author. A little over twenty years ago, in a very small way, Mr. Carpenter began his personal organ, The Houghton Line. It grew to a circulation of over 250,000 copies per month. All editorial matter in The Line came from his own pen. In it he fearlessly and forcefully discussed any subject that to him seemed worth while.

The last work of Mr. Carpenter to be published was his book, "Dollars and Sense", which was his answer to "Your Money's Worth", by Stuart Chase and F. J. Schlink.

At a special meeting of the board of directors of E. F. Houghton & Co., Philadelphia, held April 29, Louis E. Murphy, formerly vice president of the company, was elected president to succeed the late Chas. E. Carpenter. A. E. Carpenter was elected first vice president and treasurer, and George W. Pressell was elected second vice president and secretary.

Jeffrey Incorporates in Canada

The Jeffrey Manufacturing Co., Columbus, Ohio, announces the incorporation of the Jeffrey Manufacturing Co., Ltd., at Montreal, Quebec. This new company has its head office and works in Montreal, a branch office in Toronto, and a mining supply warehouse in Calgary, Alberta.

The complete line of Jeffrey chains, portable loaders, elevating conveying, pulverizing, crushing and mining machinery which for more than fifty years has been manufactured at Columbus, Ohio, will in the future be supplied by the new Canadian company.

The complete financial statement of the General Electric Co., Schenectady, N. Y., for the first three months of 1929, including sales billed, orders received and profit available for dividends on common stock, shows that two records were set: Orders received, $101,365,208, set an all-time record; sales billed, $83,385,015, set a record for first-quarter business.

The Oxford Paper Co., Rumford, Me., has moved its offices to the New York Central Building, 230 Park Ave., New York City.

The Detroit Sulphite Pulp & Paper Co., Detroit, Mich., announces the appointment of Harry Eliason as director of production.

ANOTHER ONE OF THE 47 MANUFACTURERS OF MACHINERY
FOR THE PAPER INDUSTRY THAT USES SKF BEARINGS

HESSE-ERSTED IRON WORKS

YOU MAY BUY A BEARING AS A BARGAIN BUT TRY AND GET A BARGAIN OUT OF USING IT

for

Nothing is apt to cost so much as a bearing that cost so little.

SKF Puts the Right Bearing in the Right Place

Years of Experience on Brute Jobs Make SKF Paying Investment for Paper Machinery

IT'S a rough and ready job this chip screen is now doing in a large paper mill and two rugged, long-life SKF Spherical Bearings help to keep it running without interruptions and the least amount of attention. The bearings are used on the shaker shaft and some idea of the size of this application can be gained from the fact that the upper screen measures 8' x 22' and the pulley is 48" in diameter.

For the brute jobs of the paper industry SKF Spherical Bearings have the stamina for the shocks and loads without the least impairment of their anti-friction qualities. They are the same type of bearings which are used on 23,000 journals on 35 railroads in this country and on the railroads of 21 countries abroad .... more than all other anti-friction bearings combined. And because they have many years of successful service behind them to establish their dependability, SKF Bearings are really the cheapest in the long run for paper mill applications.

2275

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Ball and Roller Bearings

Recipes for Paper and Pasteboard

To Make Fat-Proof, Moisture-Proof and Boiling-Proof Boxes

A NUMBER of recipes of interest to the manufacturer of papers and pasteboards and of boxes made from them, have been published by K. G. Junge in Die Verpackung of Jan. 20, 1929, in order to show how such products may be rendered impervious to fat, moisture-proof, air-tight or resistant to boiling. Fat-proof, moisture-proof and boiling-proof boxes of paper or pasteboard are taking increasingly the place of sheet metal, porcelain and glass containers. Boxes of this kind are now frequently employed for holding liquid foods and other products for the home, including milk, curd, cheese, butter, beer in some countries, eggs, marmalade, salves, fats, soaps and also aromatic products which attract moisture.

To prepare the paper and pasteboard for these services, it is drawn through warm liquids such as paraffin, wax, serin, etc., or brushed with them, the paper and pasteboard acquiring its strength again upon cooling, when the pores close also, making it moisture-proof. The impregnating materials may be applied cold if they are dissolved in benzine-alcohol, the latter evaporating after the mixture has been applied to the paper. Dry oils, such as linseed oil, poppy seed oil, and castor oil may be used also, for they become resinous through the oxygen of the air and leave also a covering upon the paper.

Water-proofing Pasteboard

For water-proofing and fastening pasteboard, one uses starch paste, water glass, casein, shellac, varnish, paraffin, stearin, wax, also tar and other materials. A simple material satisfactory for many purposes is animal glue made insoluble by use of potassium chromate, which enters into an insoluble combination under the influence of sunlight. In preparing such a glue for brushing onto pasteboard, glue from leather waste is soaked for 24 hours in soft water and then brought to the melting stage in the water bath. For each 100 to 150 grams of lime solution, 1 gram of potassium bichromate in 20 grams of water is added, this quantity sufficing to make the glue water-tight after it is applied and exposed to light. The covering should not be too heavy, for a thin covering binds the smooth paraffin paper very well. The blue should be kept out of light as much as possible and the brushes and other operating equipment cleaned whenever they are not in use.

Parchment Adhesives

An adhesive for parchment consists of a thinly boiled paste of wheat starch to which is added either 10 to 20 per cent pure fish glue or a little glycerin. The paste must be pliable and have good adhesive power, which can be attained by ample soaking of the very best of wheat starch.

Another proven adhesive for the binding of glassy and fat-proof parchment to pasteboard consists of a casein solution, whereby the casein is entered into a full solution as follows: 5 kg. of casein insoluble in water are dumped into a tub of 50 to 60 liters volume and then washed out twice with pure water, for which purpose the tub is filled with water and the entire mass stirred repeatedly with a wooden rod. After it has stood for about 8 to 10 hours and the casein has settled to the bottom of the tub, the water is siphoned off with a rubber hose, the acid in the casein being carried off with the water. The oftener this process is repeated, the purer becomes the casein. Then 15 liters of warm water are added to the thick paste while stirring, and furthermore 600 grams of borax in another 2 liters of hot water. The casein thickens thereby and is difficult to knead, which, however, is favorable for an intimate mixing. The kneading and stirring is continued until the solution is free of small lumps. The mass must have a thick seedy appearance. After having stood for 1 to 2 hours, the material is thinned with warm water as far as necessary for its application. The casein has the advantage over many other impregnations. The products saturated with it are unusually resistant to water, steam and atmospheric influences. Therefore, it is used in the manufacture of washable papers and for papers or pasteboards which are to be used in moisture-saturated air.

Another process in the application of casein may be as follows: The evening before its use, the casein is fed gradually—and uniformly stirred to avoid lumps, into a wooden vessel with 6 to 8 times its quantity in water of about 25 to 40° C., covered and left to stand over night. The next morning, about 15 per cent of ground borax, technically pure, is added and this is stirred repeatedly until the casein and borax have dissolved, which is judged from the fact that both form a smooth paste. In order to accelerate the dissolving, steam may be supplied; care should be taken, however, that the solution does not rise above a temperature of 45° C. Speaking of 6 to 8 times its volume of water, this must be determined by trial. When thinned with water to the proper consistency, the objects are dipped into the impregnation or left in it for an extended moment; sometimes a mere brushing with the brush and consequent drying is sufficient. One should know beforehand, whether a pasteboard which is solid, hard or soft, and also more absorptive, is to be dipped. Products which have been made from greasy substance and have been sized in the beater, should be impregnated two or three times by placing them in a tank which contains considerably thinned casein solution. Finally, it is brushed over with a thicker solution.

Absolute Imperviousness

In order to make board manufactured from wood pulp impervious to moisture, it may be painted or saturated with a solution consisting of skimmed milk, alum and slaked lime. This adds strength and toughness to the wood pulp pasteboard, and in spite of this it remains flexible without breaking. In preparing the solution, 1 part of slaked lime is added to 3 parts of skimmed milk (the former being rather thin lime milk) and well stirred; powdered alum, dissolved in water at the rate of 1 weight part to 20 of liquid weight parts of water is then added, of which 2 liters suffice for about 10 liters of the mixture of skimmed milk and lime. The solution does not keep well and should be prepared whenever needed.

For the impregnation of pasteboard bodies to become absolutely impervious to water, one uses a solution of similar nature as above. To 30 grams of slaked lime in an enamel vessel, 45 grams of fresh skimmed milk is added and both covered for 10 to 15 minutes without being stirred. When the lime and milk form a pasty mass, both are worked considerably with a wooden spoon for the purpose of intimate mixing, for undissolved particles of lime would be detrimental in the application of this impregnation. During the time that the lime and milk combine, one mixes in a vessel about 10 grams of finely powdered alum with 20 grams of boiled and again cooled linseed oil (varnish). The oil dissolves the alum powder in a few minutes, which process may be accelerated by stirring. Then the lime milk and the alum-linseed oil mixtures are combined under vigorous continuous stirring to secure an intimate mixing of the substances, which is necessary to secure uniform imperviousness to water on the objects to be painted. The mixture should be so thinned to a milk-lime liquid that it can enter into the finest pores and into the texture of the pasteboards and the objects made of pasteboard. If the mixture is not too thin, and is of the correct composition, it assures absolute protection against influences of water and water vapor. It may be applied to pasteboard by use of machines, and in the case of smaller jobs and of finished containers, preferably with a brush. Drying should take place preferably in a sun-shaded place

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TO give paper attractive whiteness look further than the trees that furnish the pulp. Go to the Bauxite mines, where Sulphate of Alumina principally originates.

We accord Bauxite its full importance. To assure first quality Bauxite containing a maximum of aluminum oxide and a minimum of silica and iron—we operate our own deposits. So Kalbfleisch Sulphate of Alumina is a white product, containing much less than the minimum allowed quantity of iron.

In Georgia, Tennessee and South America our Bauxite mines contribute to the quality of this Kalbfleisch paper chemical. It is a satisfactory policy for our customers, assuring them of a surpassingly excellent grade of Sulphate of Alumina.

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which is not too warm, and pasteboard should of course not be dried completely so as not to offer resistance in polishing. The products thus obtained are exposed for 24 hours to a temperature of 40 to 50° C. in a heating oven, whereby the linseed oil is completely absorbed by the pasteboard and hardens the latter. All parts receive now on the outside a coating of spirit shellac. After the drying, the containers are polished and again lacquered, the last coat being applied very carefully. The containers thus lacquered are again placed in the drying oven, the temperature of which is gradually lowered to 12 and eventually to 15° C., for which 12 hours suffice. Thereby the lacquer dissolves, combines itself with the linseed oil and this effects absolute imperviousness to water.

Preparation and Impregnation of Box Covers

In connection with the above discussions, something should be said of the preparation and impregnation of box covers. The molding tools must conform exactly with the size of the cover to be obtained, in order to secure covers that have uniform sides and that fit; a well molded box cover fits always and gives to the pasteboard box its actual value. Every cover molded in a well heated form, does not change its condition even when exposed to damp air. For a box of 100 mm. diameter, a pasteboard of 1 mm. should be selected; for smaller boxes the thickness may decrease to 0.5 mm. It is necessary to cover the pasteboard on one side with a wax-containing liquid, for otherwise the material sticks in the molding form and the covers tear. Frequently, it is sufficient to rub the pasteboard with hard dry soap in order to condition it for molding. However, there are wax-containing preparations which have at the same time the quality of making the pasteboard pliable and of also making the molded cover proof against moisture to a certain extent. If the cover is surfaced on both sides, it can not be affected from the contents of the box.

A suitable solution of wax, which at the same time serves as an impregnation preparation, is obtained as follows: Dissolve in a vessel containing 25 liters of pure water, under continuous stirring, 0.250 kg. of soda, 0.500 kg. of paraffin, 0.500 kg. of japanning wax, 0.100 kg. of Venetian soap, 0.100 kg. of glycerin, 0.100 kg. of French turpentine, 0.500 kg. of soapstone, and bring it to boiling. During the boiling condition, about 0.750 kg. of wheat starch previously dissolved in water is added. After cooling, the mixture is ready to use. It may be thinned with boiling water.

A further waxing and impregnation preparation is made as follows: 1 kg. of potash, 3 kg. of beeswax, 0.250 kg. of Venetian soap and 1 kg. of liquid palm oil are dissolved in 25 liters of water, and after its boiling, dissolved wheat starch is also added.

In order to make pasteboard boxes resistant to boiling, that is, to prevent them from coming apart when the contents are poured into them in hot condition, formaldehyde is employed, the boxes being placed in a tank in such a way that the formaldehyde vapors can reach all parts of the containers. Formaldehyde is supplied in suitable quantity into a sheet metal box in the tank, which is heated from the outside by a gas jet so that the formaldehyde evaporates. It is usually sufficient to expose the boxes from 15 to 30 minutes to the vapors. Afterwards all kinds of adhesions may be done on the boxes, which will also be of the same durability due to the boxes being exposed to the above formaldehyde vapors.

In order to obtain clean, odorless and tasteless impregnations for containers of food and condiment products (cups, dishes, etc.) a tasteless, odorless and colorless paraffin which has been fully refined, is employed in most cases, its melting point being about 50° C. Some paraffins with a higher melting point are used for special conditions. The containers are dipped into the moderately warmed paraffin, placed in a drying oven and thereby the paraffin adhering to the surfaces of the boxes is removed under the influence of the heat. To avoid odor in the paraffin, it should be heated only moderately and not repeatedly. A uniform saturation of the boxes with the paraffin is assured, if the boxes are warmed considerably before being dipped into the paraffin. This helps also to save in paraffin and obtain a quicker operation.

Distribution Studies

Major O. M. Porter, secretary of the American Paper and Pulp Association, in a talk before the United States Chamber of Commerce in Washington, May 2, in support of the association's declaration to the Resolutions Committee of the National Chamber, spoke as follows:

"Much of this nation's progress and prosperity has been due to its successful application of mass production; but distribution on which all business is dependent has not kept pace with mass production.

"More efficient and less wasteful methods of distribution are essential to a continuation of the useful public service of many industries. This problem concerns all important national industries.

"In the Department of Commerce the government has facilities for useful service to industry and to the public. Frequently, it can induce co-operation from individual units of industry which cannot be achieved by the trade associations of that industry. It also has the machinery for nation-wide surveys which many trade associations do not have.

"We believe that distribution surveys are a legitimate phase of the Department's service to industry and urge that adequate funds be placed at the disposal of the Department of Commerce so that it may conduct co-operative studies in the problem of more efficient and less wasteful methods of national distribution."

The text of the declaration of the American Paper and Pulp Association which formed the subject of Major Porter's address was as follows:

"Congress should provide more adequate appropriations to permit the Division of Domestic Commerce of the Department of Commerce to undertake detailed co-operative distribution studies with those fields of industry which are interested."

International Has Big Deficit

The International Paper Company, which was reorganized last November as the International Paper and Power Company by an exchange of shares of the companies, reports for 1928 a deficit of $4,706,403 after depreciation, interest, reserve for federal taxes and all dividends. This compares with a surplus of $49,588 after all dividend payments in 1927. The net revenue available for International Paper's dividends last year was $4,351,767, against $5,736,499 in 1927.

In his report to stockholders, President A. R. Graustein says that the poor showing made by the company last year was caused largely by curtailment of production of newsprint and reduction of prices. Operations of the Continental Bag and Paper Corporation, which was acquired early in the year, contributed to the deficit, he adds, as did the low price of kraft paper. He sees little likelihood of a balance being reached between production and consumption of paper in less than two or three years.

Total assets of the company on December 31, 1928, were $38,365,757, of which $5,738,675 was cash. Current assets amounted to $57,736,080, and current liabilities to $38,691,645. Gross sales and receipts were $92,872,321, compared with $65,416,136 in 1927, and gross earnings were $17,604,275, compared with $15,529,859. The deficit arose from increases in depreciation, interest and dividend payments. Dividends on the perferred and common stocks of the company amounted to $9,058,171, compared with $5,686,911 in 1927. Surplus at the end of the year was $18,184,645, against $22,648,543 at the beginning of the year.

The company's production of paper and pulp during 1928 aggregated 1,173,529 tons, contrasted with 833,933 tons in 1927. These figures are exclusive of pulp manufactured by the company for its own use in the manufacture of paper.

King Gustaf V of Sweden has decided that the jubilee gift of 5,000,000 kroners ($1,340,000) donated by Swedes at home and abroad as a gift to him on his seventieth birthday shall be used for the campaign against cancerous diseases. In accordance with his wish a new radium hospital will be built in Stockholm and the entire sum will be used for combatting cancerous diseases by treatment and research.

Frankly—

What *are* your lubrication costs per ton?

Some paper mills are running at a cost as low as 6 cents per ton of finished product. Others as high as 80 cents per ton. Every mill is an individual problem. No Two are alike—yet for every one there is a low figure and anything above this represents money thrown away. What are *your* costs—

Texaco Lubrication Service is thorough, systematic and competent—a service of specialists—lubricating engineers who have given years to the study of paper mill lubrication. The line of Texaco Lubricants is complete. It is the work of Texaco Engineers to select exactly the lubricant required for every part of every machine and show you exactly how to use it—to save money for you.

This service has saved much for others. What will it save for you? There is a Texaco representative nearby who will gladly make a survey of your plant.

TEXACO LUBRICANTS

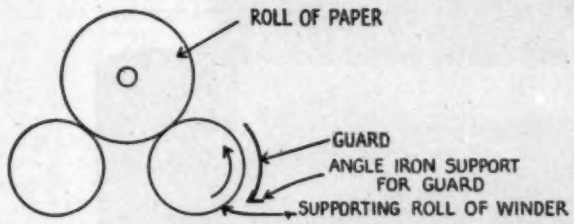
THE TEXAS COMPANY, 17 BATTERY PLACE, NEW YORK CITY

THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE.

Practical Helps for the Mill Man

Winder Guard

MOST mill executives appreciate proper guarding of equipment in order to reduce the operating accident hazard as much as possible. The application of mechanical safeguards to a machine must be made in such a way, wherever possible, that it does not in any way interfere with the proper functioning of the unit. In one paper mill, at least, it has been found advantageous to locate a guard in front of the supporting roll on the operating side of the winder. With this roll revolving, as illustrated, it was possible for a winder operator to pinch his fingers in the nip formed by the supporting roll of the winder and by the roll of paper



being formed. To eliminate this hazard it was simply necessary to design a guard that would prevent the operator from placing his fingers in the nip of the rolls. A strip of sufficiently heavy flat iron of a width and length to properly guard the roll was curved to conform to the roll surface and was fastened to an angle iron on the bottom side. The angle iron extended beyond the full length of the guard on both ends and was attached to the machine stand. This support for the guard as well as the additional strength given to the guard by the angle iron makes a very strong guard, and as an entire unit has decreased the operating hazard of the winder to a remarkable extent.

Charting and Painting of Pipe Lines

MANY lines of piping are required in the average pulp and paper mill. There are pipe lines carrying water for process work, fire protection or general water supply lines for steam or hot condensate lines for pulp and paper stock; lines for white water and waste materials; and lines for compressed air, caustic liquor, black liquor, sulphite acid, milk-of-lime, bleach liquor, chlorine, oil, alum, rosin size, clay, etc. In fact, the piping system is frequently a very complicated network which requires much time on the part of the new employee to understand when taught such details by a foreman or fellow workman. Sometimes the identity of a pipe line may even be lost unless it has been properly charted.

In the design of a pulp and paper plant most engineers prepare a complete layout of all plant piping. With such a layout available to the engineering department of the mill, it behooves the department to keep this material up-to-date and fundamentally accurate. In addition to a chart or print showing location and use of all pipe lines and valves, as well as direction of flow of material within the lines, it is essential that employees responsible in any way for the functioning of any or all such lines be made familiar with their identification. These employees should be made so familiar with the lines over which they have control that they should function practically and automatically or instinctively when it is necessary to make any changes in valve operation.

A number of mills have found it of advantage to paint each line with a distinctive color to aid in ready recognition. It has also been found worth while to tag every important valve to avoid any chance for error in operation. Such plant housekeeping cannot help but prove of interest to alert management as well as employees who wish to perform their duties most efficiently.

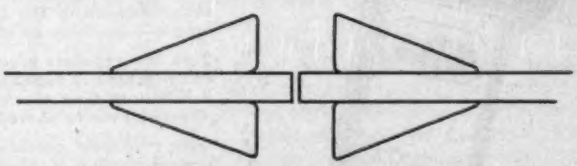
Paper Machine Felt Hints

IN STORING felts it is best to have a dry, airy and clean room. Felts should be placed on shelves with the first shelf from six to eight inches above the floor. Likewise, felts should be kept away from walls—especially concrete or brick. It is necessary that extra good care be given felts during the summer. Danger from moths continues throughout these months. Moth preventatives such as moth balls and napthalene should be used freely and frequently. Storage shelves should be covered with tarred paper. The felts and jackets, where possible, should be kept in the original wrappers. Holes in the paper wrappers should be covered with gummed tape. If a wrapper is badly torn, it should be removed and the felt rewrapped with new paper.

It should be remembered that felts on idle machines deteriorate almost as fast as if running. When a machine is shut down, it is advisable to raise all rolls clear of the felts, and care should be taken to see that no felt is in contact with iron rolls in order to prevent rust spots. A felt should be raised so that every point is accessible to the air. This precaution is necessary for proper drying and to avoid mildew. If the tension in a felt is unrelieved at the time of a shut-down, the felt will generally stretch as it dries, and will weaken between the centers of the points of contact. A wet streak will remain under each roll, and this portion of the felt may soon develop a slack spot after the machine is again placed in operation. By observing a few precautions, the paper maker will obtain the best possible life from the felts.

Door Guards

SWING doors in a paper mill are frequently battered to pieces by truck operators who in passing through the doorways do not stop to open the doors but simply butt into them with the trucks and thus cause them to open. Even



HORIZONTAL CROSS SECTION OF GUARD ON DOUBLE SWINGING DOORS

though most of the doors are of unusually heavy construction, it does not take long before a new door would be battered, if the truck operators were careless, or if some means were not provided to prevent the trucks from bumping the doors. In one plant, where double swinging doors were used, it was found necessary to protect the doors from the bumps received from the trucks when passing through them. Four heavy strips of flat iron, two for each door, were bent into practically right triangular shaped pieces and bolted to each of the two swinging doors as illustrated. The strips were bolted to the doors at a height from the floor just sufficient to take the jolt of the trucks. This door guard not only made it possible for truckers to open the doors without leaving their trucks but also protected the doors from being knocked to pieces as the trucks passed through them.

3 things YOU CAN NOW DO while the machine is running

Better paper is the result of operating the Voith Inlet while cutting operating expense

—and all of the exclusive operating advantages of the 1929 Voith Inlet that show on the production cost sheet as operating savings.

Consider these three features—

1. *You can change deckles while the machine is running, thus eliminating the loss of production time in stopping the machine to change deckles.*
2. *You can regulate placing the apron on the wire while the machine is running. There is not a minute lost in production time to change the length of apron on the wire—either to shorten or lengthen it.*
3. *One man can quickly and accurately change orifice opening which is directly in front of distributing roll.*

Over 266 Voith Inlets are showing production savings for paper mills throughout the country—helping to make more and better paper while reducing cost. Write today for details on the 1929 Voith Inlet.

Send for This Book

It contains valuable information on lowering operation costs to produce better paper.

VALLEY Equipment Includes

Beaters: Holland and Niagara
Deckers: Single and Double
Agitator Equipment
Screens: Flat and Rotary
Pumps: Centrifugal and Stuff
Cylinder Paper Machines
Voith Stock Inlet
Laboratory Equipment
Stock Valves: 2 and 3 Way
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The Month at Washington

SINCE Congress first opened its doors on the 71st Sessions, the marble halls of the Capitol have been flooded with legislation, both new and old. All bills failing at the last session of the 70th Congress, must to receive consideration, be re-introduced at this session, and so we find the Government Printing Office working overtime grinding out bills. Among the many introduced we find the following of interest:

H. R. 11 and S. 240 (known as the Capper-Kelly Bill), to protect trade-mark owners, distributors, and the public against injurious and uneconomic practices in the distribution of articles of standard quality under a distinguishing trade-mark, brand, or name.

H. R. 112 to stabilize the buying power of money by regulating the gold standard as the unit of value, guided by a market gauge. Of similar purport is H. R. 965.

H. R. 122, defining combinations and conspiracies in trade and labor disputes and prohibiting the issuance of injunctions therein.

H. R. 749 to prohibit the sending of unsolicited merchandise through the mails. S. 610 covers the same object.

H. R. 995 to create a division of safety in the Department of Labor.

H. R. 1234, to authorize the Postmaster General to impose demurrage charges on undelivered collect-on-delivery parcels.

H. R. 1643, to promote labor and industry in the U. S. by expanding in the foreign field the service now rendered by the Departmest of Labor, in acquiring and diffusing useful information regarding labor and industry, etc.

Congress is hot on the trail of fake bankruptcies and H. Res. 13 would appoint a select committee to inquire into the enforcement, administration, interpretation, and practice of the bankruptcy law by the U. S. courts, the appointment of receivers, election of trustees in bankruptcy, amount and kind of all fees paid, cost and manner of distributing and administering bankrupt estates, etc. Of the same tenor is H. Res. 29.

H. J. Res. 31 would appoint a commission to study the causes and to suggest the necessary remedy of business cycles and unemployment.

S. 373 is our old friend seeking to require the registration of lobbyists and to control lobbying.

S. 561 would authorize an appropriation to encourage the utilization of farm waste for the production of paper, by aiding farmers and local chambers of commerce to develop the manufacturing of paper pulp from waste crops.

Interstate Commerce Rulings—The operation of new rates on paper bags was suspended in a recent order of the Interstate Commerce Commission (I & S Docket No. 3281), the suspended schedules proposing to cancel commodity rates on paper bags, crinkled, garment storage or moth, and shopping, in straight or mixed carloads, with ordinary paper bags or wrapping and printing paper.

The failure of the Chicago, Milwaukee, St. Paul & Pacific R. R. and other carriers, participating in the traffic to establish rail-barge-rail rates on paper from Wisconsin and Minnesota points of origin to Jackson, Miss., was declared by the Commission in a decision just made public (Docket No. 20772).

In Albany Perforated Wrapping Paper Co. vs. Boston & Albany R. R., the Commission finds (No. 20764) that rates on wood pulp, in carloads, from Boston to certain destinations on the B. & A. R. R. were not unreasonable, while rates on wood pulp from Albany to the same destinations were found unreasonable, and reasonable rates were prescribed, with reparation awarded.

In Washington Paper Co. vs. B. & O. R. R. (No. 20348), the Commission finds that rates on paper cups, in carloads, and less, from Chicago, New York City and Brooklyn to Washington, D. C., were unreasonable, and reparation was awarded.

In Atlantic Pulp and Paper Corp. vs. Savannah & Atlanta Ry. (No. 2614), the Commission finds that rates on certain shipments of wood pulp, in carloads, moving from points in Georgia to Massachusetts, were unreasonable, and reparation was awarded.

In Watab Paper Co. vs. Canadian National Ry. (No. 20635), rates on pulpwood in carloads from Warroad, Minn., to Sartell, Minn., originating in Canada, were found unreasonable, and reasonable rates were prescribed for the future.

Recent Customs Decisions—Old rags, classified as waste at 10 per cent ad valorem under par. 1457 of the tariff act of 1922, were claimed dutiable as old junk under par. 1601 or free of duty as rags used chiefly for papermaking under par. 1651, and the Customs Court finding the rags of the variety known as paper stock rags, admitted them free of duty (No. 216424-G-75004).

Fancy paper, covered with a design or pattern in gold, classified at 4½c per pound and 17 per cent ad valorem under par. 1305, was claimed dutiable at only 4½c per pound under the same paragraph. The court found it so dutiable as surface-coated paper (No. 122477-G).

Pergamolyn paper, classified at 35 per cent ad valorem under par. 1313, was claimed dutiable as manufacturers of paper at 5c per pound and 20 per cent ad valorem under par. 1305, and the Customs Court in a ruling just handed down, sustained this protest (No. 215384-G).

Manufactures of paper classified at 35 per cent ad valorem under par. 1313 were claimed to be manufactures of papier-mache dutiable at 25 per cent under par. 1303, and the Customs Court so ruled (No. 316339-G).

Tariff Hearings on Paper—The Ways and Means Committee of the House has been squabbling among themselves about "leaks of information" concerning the majority activities in the recent tariff hearings on paper. Publishers, paper manufacturers, etc., were consulted in preparing the new schedules.

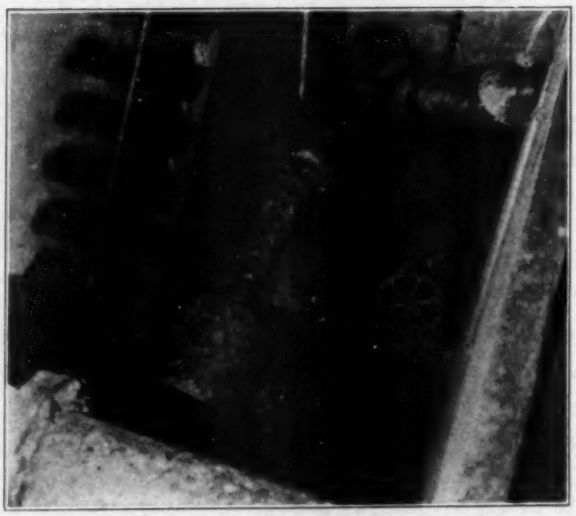
An amendment regarding trade secrets is also being asked, regarding the practice of the Tariff Commission in ascertaining costs of production. A provision is to be tagged on to the act making all information obtained a "trade secret" and not to be published in such form by the government as to divulge or disclose such confidential information.

Sales Problems to be Discussed by Trade Leaders—The Secretary of Commerce announces that approximately 200 industrial executives, concerned primarily with selling and advertising, will meet at the Department late in May or early in June for a conference designed to develop a broader understanding of the problems affecting industrial selling and advertising as contrasted with consumer marketing. The relations of the world's industrial developments to sales of both raw and manufactured commodities will also be considered. Experiences will be exchanged at this meeting, particularly in foreign markets, by which it is hoped to create not only renewed confidences but also a spirit of helpful co-operation on the part of industry.

Exclusion of Dumped Goods—The proper method of dealing with unfair competition in the importation of goods into the U. S. is their exclusion, the Tariff Commission has just concluded after a study of the operations of Section 316 of the Tariff Act of 1922, which is designed to prevent unfair competition and the "dumping" of foreign commodities on the American market. This unfair competition cannot be

Plant of the Cornstalk Products Co., Danville, Ill.

F-M Stock Pump handling stock with a density as high as 7%



Serving the Paper Industry 100 per cent

The plant of the Cornstalk Products Co., at Danville, Ill., is an outstanding example of the way Fairbanks-Morse Pumps are serving the paper industry.

In the many processes connected with this unique development, 44 Fairbanks-Morse Pumps are successfully handling all of the pumping in the various operations of making cornstalks into paper pulp.

The fact that F-M Pumps were selected to meet the new and untried conditions of service in every department of this plant is a tribute to the record for dependability established in other paper mills.

Efficient in design, simple in construction and sturdy in build they meet every pumping problem in paper mill service 100 per cent.

FAIRBANKS, MORSE & CO., Chicago

32 branches at your service throughout the United States

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offset by increasing the import duty, but the article in question should be excluded.

Income Tax Decisions—The expenses of travelling, entertaining, collecting and cash rebates to customers was held to be an ordinary and necessary business expense, properly allowable as a deduction from income, according to a recent decision of the U. S. Board of Tax Appeals (Docket No. 20310).

An amount paid an attorney for services rendered in appearing before certain legislative committees in connection with certain proposed legislation affecting the taxpayer's business, was also held to be an ordinary and necessary business expense, deductible from gross income in the taxable year, in another decision (No. 12529).

The extent of loss sustained by reason of damage to a country estate from a violent ice, sleet and windstorm, was held to be deductible from gross income in two different decisions (No. 20324, and 13552).

The Internal Revenue Bureau has just ruled that the gasoline tax imposed by the State of Michigan is a tax deductible in the income tax returns of those who paid the tax, where the tax had not been made a part of the business expense of the owner or driver of the truck, car, etc. (No. 2465).

College fraternities are to be classified under the revenue acts as social organizations, not organized exclusively for literary or scientific purposes, and therefore contributions to them are not deductible in computing net income, according to another ruling just handed down by the General Counsel of the Internal Revenue (Memo 5952).

Employment and Pay-Rolls—Employment in March increased 0.8 per cent over February, while pay-roll totals increased 1 per cent, according to a report just made public by the Bureau of Labor Statistics. With 1926 as the basis of 100, we find the following changes:

	Employment			Pay-Roll Totals		
	Mar. 1928	Feb. 1929	Mar. 1929	Mar. 1928	Feb. 1929	Mar. 1929
Paper and pulp.....	94.6	95.0	95.0	95.9	98.5	98.4
Paper boxes	93.2	92.6	92.6	97.3	99.1	101.3

Employment stability is found to be high in paper factories, according to a survey recently made by the Bureau, showing that the paper and pulp industry as a whole has the best record of stability of employment of any industry. The results of this survey have just been made public, and a copy of the findings may be had on request.

Vacations with pay are provided for in 71 trade agreements filed since 1926 with the Bureau. Length of service usually required to establish eligibility for vacation with pay is one year, and the length of the vacation varies from six to fifteen days. A copy of the report may be had upon application by interested parties.

Business Cycles—Business cycles in the United States in a technical sense, have not been ironed out, despite relative stability of business in the past few years, is the conclusion reached by the President's Unemployment Conference, and a full report on recent economic changes is shortly to be published by the committee on the subject of business cycles from 1921 to 1927.

Recent Government Publications—"Glossary of Paper Terms and Instructions to Exporters," for guidance in properly listing and classifying exports of paper and paper products on shippers' export declarations, has just been issued by the Government Printing Office for the Bureau of Foreign and Domestic Commerce, running alphabetically from abrasive paper to wrapping and writing paper.

"Facts for Marketing in New England," being The Market Data Handbook, is the third volume in the commercial survey of New England just made available by the Department of Commerce (Series No. 24), being a thorough analysis of trade territories, maps, railroads, and highways with other pertinent data for building sales quotas. Thirteen major, 32 wholesale, and 114 retail trading areas are mapped out, showing national, regional, and local distribution, with wholesale and retail breakdown.

"Report of Airway Marking Committee," has just been issued by the Aeronautics Branch of the Department of Commerce, with findings and recommendations for all air-marking insignia, locations, construction, illumination, color combinations and size and style of lettering, meridian marker, airport pointer, etc.

"Transcontinental and Intercoastal Trade of the Pacific Southwest", being Domestic Commerce Series No. 25, has just been issued by the Bureau of Foreign and Domestic Commerce, being an analysis of commodity shipments into and out of the Pacific southwest, showing 87 westbound and 81 eastbound commodities, data re manufacturers, distributors, shippers and traffic agencies.

Wholesale Prices—The general level of wholesale prices in March was slightly above that of February, according to information collected by the Bureau of Labor Statistics. With 1926 as the basis of 100, the following changes are shown:

	Mar. 1928	Feb. 1929	Mar. 1929	Purchasing power of the dollar (March)
Paper and pulp.....	90.5	87.8	87.8	113.9

False Advertising—In the last three weeks the Federal Trade Commission has proceeded against more than two hundred advertisers and publications that print misleading statements, in a drive to end this practice of false advertising.

The Why of Mergers—The underlying motive of present day tendency to mergers in industry, which are increasing rapidly is this country, appears to be the search for better markets and marketing conditions, rather than any interest in cheaper and more efficient production, is the conclusion reached by the President's Unemployment Conference, as the result of its study of changes in the industrial structure. The findings of the conference are shortly to appear in published form as "The Changing Structure of Industry."

Stamps Adhere Poorly to Envelopes—In a series of tests of postage stamps made by the Bureau of Standards, particularly regarding their adhesive quality, it was found that postage stamp gum does not properly react with a very hard bond paper envelope, heavily surface-sized with starch, and manufacturers of envelope paper are advised to test their paper before putting it on the market for proper reaction with glue.

Government Purchasing—The "certification plan" of purchase for the Federal Government, developed and inaugurated by the Bureau of Standards, thus far has been adopted by 1,962 separate firms, which have expressed their willingness to supply commodities guaranteed to comply with government specifications. The plan has been applied to 248 government master specifications and 248 lists of manufacturers.

Philadelphia Bankruptcy Studied—The Domestic Commerce Division is making a study of the bankruptcy question in Philadelphia, credit conditions and causes of failures among retailers. The information is being obtained largely through questionnaires which cover the ground very thoroughly, voluntary and involuntary bankruptcy, assets or no assets, history, owner's business background, capital involved, etc.

Wholesale Conference—The second national wholesale conference was held in Washington, D. C., April 26-27, at the U. S. Chamber of Commerce, to focus upon distribution as the field in which business will make its next great advance. The huge savings effected in production and manufacture through cost accounting, simplification and standardization, with more skillful management, can be duplicated in a measure in wholesaling, the conference concluded. Four published reports were presented at the conference, being submitted by the four committees, who studied the wholesalers' functions and services; the economic factors affecting wholesaling; business analyses; and credits, sales, terms and collections.

Work of Paper Section of Standards Bureau—The Bureau of Standards has just published a short resume of its work on paper in recent months, including the fiber composition of some wall papers, co-operative development of permanent ledger paper, permanence of book paper, artichoke tops tested for papermaking qualities, and the adhesive qualities of postage stamps. A copy of this resume may be had on request.

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P. 57

Canadian News

Improvement in Newsprint Situation

That the newsprint industry has turned the corner and appears once more on the upgrade might be gathered from the March production figures issued by the News Print Service Bureau. In March the Canadian mills were operating at a ratio of 83.8 per cent of rated capacity, as compared with just under 80 per cent during the month of February. Production in March amounted to 218,147 tons, and shipments were ahead of production, amounting to 219,736 tons. Production in the United States during the month was 114,586 tons. Here again shipments ran ahead of output, thus cutting down stocks on hand at the mills. The ration of United States production was only 78.6 per cent.

An encouraging view of the situation was given out by Alexander Smith, president of Abitibi Power and Paper Co., at the annual meeting of that company in Montreal last month. He referred to the prospects of a decided increase in consumption of newsprint and said that, while the prospects are not yet entirely clear, it would be a safe estimate that the Canadian outlook would be 75 per cent or more of capacity for the current year, which would be a great improvement over the last six months. In was an encouraging indication, he said, that the consumption was improving so steadily in the United States, where, despite the money flurries, there was apparently great prosperity. Advertising has also shown a large increase, and this is one of the index figures that should be watched closely. Answering a shareholder's query, the president asserted that it could not be definitely stated that the newsprint price had been stabilized. The price at present was very low, but considering the overproduction this was not a bad factor because nothing was as discouraging to new production as low prices. One good sign was the stoppage of indiscriminate price-cutting, so that at the present time the manufacturers knew what they were getting for their product.

E. W. Backus, president of the Minnesota and Ontario Paper Co. and its subsidiaries, in the remarks which he addressed to the shareholders of the company in the annual report, says: "The newsprint industry is now being stabilized through the efforts of some of the Canadian prime ministers, and from now on we may look for a steady improvement in conditions, justifying the optimism we feel for the future."

Pulpwood Parley to Survey Supply

For the primary purpose of discovering exactly what pulpwood resources are at present standing in Canada, and to determine the extent of the inroads made upon them during the past few years by the rapidly expanding pulp and paper industry, a Dominion-wide conference of provincial representatives and experts, with men of the Federal Forestry Branch, will meet, in all probability in June. This conference, it is anticipated, will show how long, at the present rate of consumption, the pulpwood forests of Canada will last, or whether or not they will reproduce themselves with sufficient rapidity to make the supply of pulpwood inexhaustible. Announcement to this effect was made a month ago by the Forestry Branch of the Dominion Department of the Interior.

Officials of the Forestry Branch, discussing the pulp situation in Canada as its exists today, stated that the proposed forestry survey would show, to a close approximation, what natural reproduction and scientific culture is doing to retain Canada's timber wealth, and the relative importance of forest replanting with forest protection. Experts of the department stated that the Forestry Branch field men planted over 5,000,000 new trees annually. This was a "mere drop in the bucket", they said. To achieve any real progress in reforestation it would be necessary to allow for the growth of 5,000,000,000 new trees every year. The simpler expedient, they believe, is to allow the natural reproduction to take its course and to protect by every means known to modern science the new growth throughout the country.

Canada's Output of Paper Products

The output of miscellaneous paper products in Canada for the past year showed a substantial increase in practically all groups. This group of industries includes those manufacturing paper boxes, building and roofing papers, stationery and envelopes, wall paper, and other paper products. The value of paper boxes and bags manufactured shows an increase of approximately $3,000,000. The total value of the output of this group was $18,303,127. Building and roofing paper products were valued at $5,573,770, an increase of nearly $1,000,000 over the previous year. The value of stationery and envelopes manufactured shows the smallest gain of the group, with an increase of only $16,000 and a total of $5,738,324. Wall paper products were valued at $3,738,737, an increase of some $58,000. The last group of industries, in which is included all other paper products, had a total output valued at $7,196,268, a gain of about $2,700,000.

Persistent Merger Rumors

Considerable interest was aroused in pulp and paper circles towards the end of last month by the report that actual negotiations, looking to a strong combination of newsprint companies have been completed. A merger of Canada Power and Paper and Abitibi Power and Paper is mentioned in the gossip; but it is rumored that the intention is that this shall be preceded by a combination of the Brompton, St. Lawrence and Lake St. John companies, and that when this is completed it will pass to Canada Power and that the situation will then be ripe for Abitibi and Canada Power and Paper to get together.

It is obvious that any such merger would represent an enormous tonnage and would, in fact, leave Canadian International Paper and Price Bros. the main producers of the balance of newsprint made in eastern Canada. According to the rumors, interests in reasonably close touch with the newsprint situation have stated that while a great many possible mergers within the industry had been discussed lately, the above line-up was a new construction. It would be possible, it was admitted, but it did not seem in line immediate probability.

Arthur L. Dawe, former secretary of the Canadian Pulp and Paper Association, has offered a medal to be known as "The I. H. Weldon Medal," to be awarded for the best paper contributed by a member of the Technical Section of the Association at the annual meeting. The executive council of the Section has gratefully accepted Mr. Dawe's offer, and has appointed a committee to prepare rules to govern the award.

Pulp and Paper Machinery Map

A mass of information pertaining to the pulp and paper machinery industry of Canada is embodied in a ready-reference map prepared by the Department of the Interior at Ottawa, through the Natural Resources Intelligence Service. The preliminary issue of the map is designed as a guide to those interested in purchasing Canadian-made pulp and paper machinery, as well as those associated with the industry. This is map No. 2 of the pulp and paper series of industrial maps, No. 1 being the pulp and paper map.

One may see from a glance at the map the chief centers of manufacture of pulp and papermaking machinery in Canada. Another point very well depicted is the small

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RYTHER LOG HAULS

RYTHER LOG HAULS are constructed to carry any length of logs. The construction can be of timbers or structural steel. The machine parts are extra heavy and designed for maximum capacities. The standard design is flexible and can be combined to meet all river and ice conditions.

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degree of manufacturing carried along this line in the western provinces, although the manufacture of pulp and paper is a growing industry there, especialy in British Columbia. An outstanding feature of the map is the inclusion of a compact directory, which gives the names and addresses of companies manufacturing machinery peculiar to the pulp and paper industry. A second directory gives a classified list of products and the names and addresses of companies handling the various products. A fact worthy of mention is that these lists have been compiled from information actually received from the various companies mentioned.

Halifax Becoming Newsprint Shipping Center

The shipment of newsprint from the mills of Ontario and Quebec through the port of Halifax, N. S., this past winter has assumed large proportions and bids fair to increase rapidly during the season when navigation is closed on the St. Lawrence. Gilbert E. Ring, representative of the firm of Guy Tombs, Ltd., which handles shipments for practically all the central Canadian producers, was in Halifax lately, looking after bookings and shipments. During a single week in March it is estimated that over 250 cars of newsprint rolled into Halifax to be placed aboard liners, freighters and vessels of practically every description for shipment to Great Britain, Australia, New Zealand, South Africa, and South American ports. Leading daily newspapers in Australia, New Zealand, and Buenos Aires are heavy buyers of Canadian newsprint, and it is to them that the bulk of the shipments were consigned.

Foreign demand for Canadian newsprint continues to broaden, and the outlook is for further expansion in the volume of sales abroad. The United States, of course, has steadily increased its consumption of Canadian newsprint, but exports to Great Britain have also shown good growth. Complete figures for the calendar year made available at Ottawa show that exports to the United Kingdom more than trebled during 1928, amounting to 2,614,015 cwt., as compared with 832,026 the previous year. Values of these exports amounted to $8,368,338, as compared with $2,685,604 in 1927. Other increases were as follows: Argentine Republic, from 265,373 to 960,538; Australia, from 929,890 to 976,108; British South Africa, from 138,122 to 239,609; Cuba, from 147,158 to 202,936; New Zealand, from 39,566 to 345,374. The United States, of course, holds a tremendous lead with a total absorbed of 38,697,774 cwt., compared with 34,968,094 in 1927.

Dusting of large areas of Ontario forests by airplane will be carried out under the direction of the Department of National Defence this year, and for this purpose the Department has ordered a new Ford tri-motor hydroplane. The ravages of the spruce budworm having been checked to a material extent by this process in Nova Scotia, the zone of operations will be extended to Ontario.

An important change in the Canadian publishing field has been announced from the head office of the National Business Publications, Ltd., a newly-organized firm which has just taken over eleven of Canada's leading technical periodicals from the Industrial and Educational Publishing Co. of Gardenvale, Que. The most important of these publications, and the one of greatest interest to the pulp and paper industry, is the Pulp and Paper Magazine of Canada. J. N. Stephenson, the well-known and popular editor of the magazine, retains the direction of its editorial destinies and has been elected vice-president of the new organization. While no drastic changes are planned, a policy of expansion and improvement has been inaugurated with a view to giving better service to the trades served by each periodical in its particular field.

Canadian Barking Drum Co., Ltd., has been appointed exclusive sales agent in Canada, excepting the Pacific Coast and Newfoundland, for the Leahy No-Blind vibrating screen, which is a development of a score of years' experience in design and building of classifying machinery.

The Technical Section of the Canadian Pulp and Paper Association plans to hold its summer meeting this year on June 18, 19 and 20, assembling at Montreal and proceeding by rail to Three-Rivers, where it is proposed to spend a day visiting mills in that district, leaving for Quebec in the evening and spending two days in the latter city. The first day will be devoted to a special program and the second to visiting the two Quebec mills. Since Mr. McInnis, general manager of Anglo-Canadian Pulp and Paper Mills, is chairman of the Section this year, and since Quebec is his home town, a more than ordinarily interesting meeting is assured.

H. E. Rockwood, who has been employed as superintendent of the Oswegatchie Paper Co.'s mill at Natural Dam, N. Y., for the past year or more, and up until the recent shut down, has gone to Cornerbrook, Newfoundland, where he has accepted a position in the International Paper Co.'s mill.

The million-dollar suit of Thompson, Macdonald and others of Canada against the Reid-Newfoundland Co. for commission and shares arising out of the Humber Pulp and Paper Co. deal was decided recently by Judge Kent, at St. John's, Nfd., in favor of the Reid Co., with costs.

QUEBEC

Canada Paper Forms Distributing Organization

Announcements have been sent to the Canadian printing trade of the incorporation of Canada Paper Wholesale, Ltd., to carry on and extend the distribution of the various papers formerly distributed by Canada Paper Co. of Toronto and Montreal. Larger and more complete stocks of improved products, it is stated, will be carried to further the service of the new company to Canadian printers, lithographers and paper box makers.

The company has been successful in retaining H. B. Donovan as president and managing director. Well and favorably known to the paper trade from coast to coast, Mr. Donovan came to Canada from Great Britain as a young lad, previously having had a few years' experience in the paper trade overseas. He linked up with the Canada Paper Co., and has been with the firm for forty-seven years, having risen from a warehouse boy to the position of sales manager.

Quebec Pulp and Paper Corp. Shows Loss

As a logical sequence to the movement of the groundwood market, the first annual report of Quebec Pulp and Paper Corporation, covering a period of 13 months to December 31, 1928, shows that a loss of $372,575 was sustained by the company during the period of operations. President A. S. McNichols stated that owing to the decline both in demand and in price for the last four years the loss was not altogether unexpected.

Quebec Pulp and Paper Corp. is the company that took over the Quebec Pulp and Paper Mills, Ltd., which had been purchased in the latter part of 1927 by interests identified with Price Bros. and Port Alfred Pulp and Paper Corp. During 1928 the company operated only No. 1 mill at Chicoutimi and even that at slightly below capacity. No. 2 mill at Chicoutimi remained idle, as well as the mill at Val Jalbert. Mr. McNichols announced that the Val Jalbert mill had been definitely closed down, owing to the unsatisfactory market conditions, as well as to the depleted forest resources in the region affected.

The balance sheet reveals a strong financial position despite the poor operating results. Current assets are shown at $1,481,603, and current liabilities at $278,456, indicating net working capital at $1,203,147.

Although the newsprint depression is causing many companies to go slowly on the ordering of new machinery, Dominion Engineering Works' plant is keeping up a high level of operation on orders for newsprint machinery. Do-

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Long periods between burrings
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Uniform pulp

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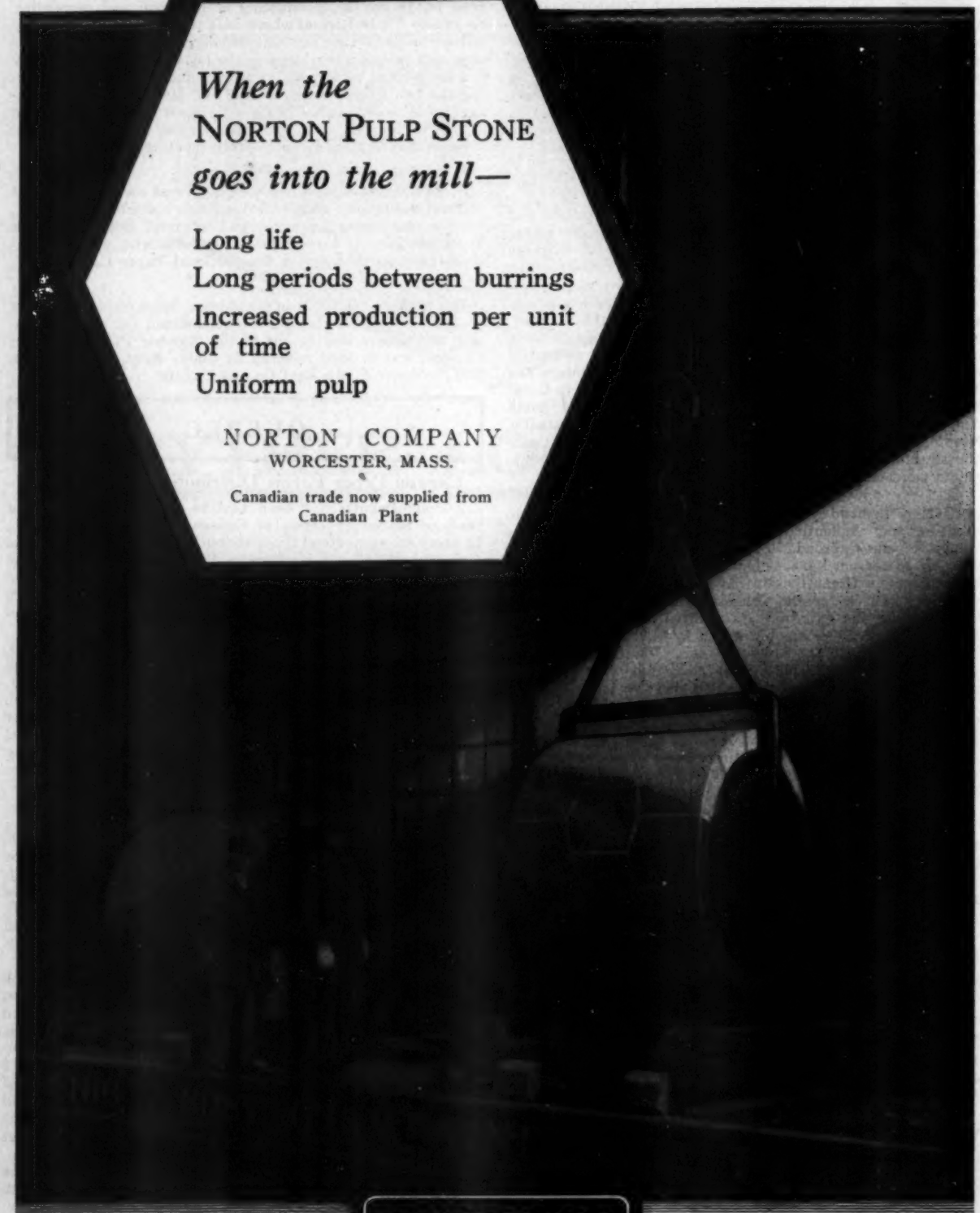


Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor and Stair Tiles

minion Engineering recently acquired Chas. Walmsley (Canada), Ltd., and through that company has obtained orders for two newsprint machines for the Mersey Paper Co., Nova Scotia, with likelihood of an order for a third very soon. The company is also completing machinery for New Brunswick International Paper Co.'s mill now under construction at Dalhousie, including two newsprint machines. Two other machines of a similar type are being built for the projected newsprint mill of the MacLaren interests at Buckingham.

Commander Byrd's dogs in the Antarctic are getting a well-earned rest in snow tunnels. The information came in a radio message from the Commander to Franke Clarke, president of the Anglo-Canadian Paper Mills, Quebec. Mr. Clarke made the arrangements for the gathering of the dogs for the expedition at various posts of the Clarke Trading Co., of which he is also president, along the north shore of the St. Lawrence River.

A contract has been awarded to Arthur Leduc for construction of a factory building on La Salle St., Montreal, for the King Paper Box Co., Ltd., Montreal. The building will cost approximately $55,000.

The Rolland Paper Co., of Montreal, manufacturer of fine papers, practically all of which are sold in the domestic market, has put its new 86-inch fine paper machine into operation at its plant at St. Jérôme. The total capacity of the plant is now over 8,200 tons per annum. A new line of fine papers has recently been put on the market by the company, and is said to be meeting with success.

Building Products, Ltd., has started producing fiber board and containers in the new plant at Portneuf. The company has also evolved a new type of asphalt shingle, which is in the form of the old wooden shingle, and for which full patent rights have been secured.

An incorrect statement has been published to the effect that Price Bros. had turned over one of the machines in the Jonquières mill for the production of fine papers. With the general state of affairs existing at the present time, it is not, perhaps, surprising that such rumors should get about; but it is unfortunate that incorrect information of this kind is presented to a public which may be interested in the paper industry but which has not the facilities for verifying it.

Wayagamack Pulp and Paper Co. is installing two Temperly-Wild bleacher beaters as part of its preparation for making sulphite wrappings and specialties.

I. H. Copeland, who has been mill manager of the Murray Bay Paper Co., resigned that position to accept a post with Canadian International Paper Co. at Three-Rivers, where he has taken up his new duties as assistant mill manager in place of Frank R. Hyatt, who was appointed manager of the company's Berlin, N. H., mill a short time ago. Mr. Copeland is a graduate of Lawrenceville School and later studied mechanical engineering. His papermaking career began with the Finch-Pruyn Co., after which he was connected with the New York Times and the Tidewater Paper Mills for some ten years, having charge of raw material supply. Mr. Copeland came to Canada several years ago in connection with the Ste. Anne Paper Co., at Beaupré, and was later appointed manager of the Murray Bay Co., to which the newsprint machines of the Tidewater Paper Co. were transferred.

Gatineau Power Co., one of the units of Canadian Hydro-Electric Corp., controlled by International Hydro-Electric System, a subsidiary of International Paper and Power Co., has started the second 25,000 hp. generator in its Bryson plant. Located on the Ottawa River, 50 miles above the City of Ottawa, the Bryson station is designed for 75,000 hp. in three units of 25,000 hp. each, of which two are now installed and in operation. With the starting of the second generator in the Bryson power house, Gatineau Power now has hydroelectric plants on the Ottawa River and its tributaries of an aggregate installed capacity of 562,600 hp., slightly greater than the installed capacity on the American side of Niagara Falls. Of this power, 436,000 hp. is in the hydroelectric plants of the company on the Gatineau River, and the remaining 126,600 hp. is on the Ottawa River and its other tributaries.

Report Covers Difficult Period

The report of the St. Lawrence Paper Mills Co., Ltd., which was recently sent to shareholders, covers a difficult period for the newsprint industry. The preferred dividends are shown comfortably earned, and President Ernest Rossiter expresses himself in a hopeful manner. A condensed consolidated balance sheet for the year ended December 31, 1928, attached to the letter, together with profit and loss statement for that period, reflects the operation of but four machines. The financial status of the company is reflected in the ratio of current assets to current liabilities, which are shown at $7,263,018 and $2,433,750, the net working capital being $4,829,268.

Installation of two additional newsprint machines with necessary new buildings and auxiliary equipment is completed, so that the mill now has six machines. It is anticipated by the management that at the percentage of operation which will be possible under the arrangement agreed upon at the instance of the Premiers of Quebec and Ontario and at the selling price of $55 a ton, earnings of the company will more than cover the preferred share dividends in 1929.

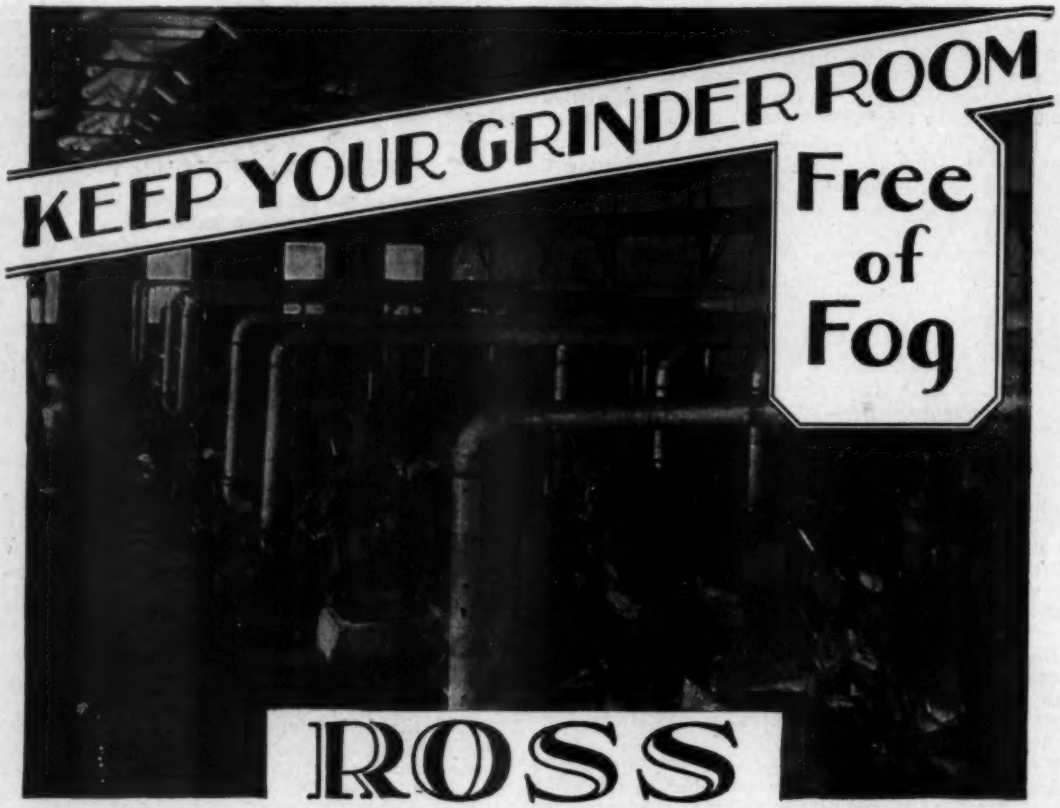
The death of Emil Andrew Wallberg, a Swedish-Canadian civil engineer who worked his way to power and affluence through the designing, construction and operation of pulp and paper and other industrial plants in Ontario and Quebec, occurred on March 30th at Battle Creek, Mich. Mr. Wallberg was probably best known as organizer and president of the Lake St. John Power and Paper Co., which is operating a 250-ton newsprint mill at Dolbeau, in the Lake St. John district.

Building Products, Ltd., Montreal, manufacturers of wallboard and kindred specialties, is developing a new department to be devoted to the manufacture of paper boxes and cartons. Equipment has been arranged at one of the company's plants for initial operations to be carried out on a moderate scale. Should the market for the new product prove as now anticipated, the company proposes to develop a large capacity in this line. Raw materials will be secured from the St. Maurice Valley Corporation, in which Building Products, Ltd., is interested; it also holds a 50 per cent interest in Forest Products, Ltd., which produces wallboard and kindred material.

ONTARIO

Great Lakes Paper Co. Operates Largest Paper Machine

In the presence of mill, construction, manufacturing and company officials, the mammoth new paper machine of the Great Lakes Pulp and Paper Co. at Fort William was put through its preliminary tests on April 5th and performed to the utmost satisfaction of all concerned. Started at 4 p. m., the huge 304-inch machine, which supersedes the four 270-inch machines in the Gatineau mill of International Paper as the largest in the world, operated without interruption for one hour and a half. Power was then shut off and all the apparatus was examined. In addition to members of the mill and construction staffs, other officials present were Daniel McLeod, vice-president of the company; R. W. Andrews, chief engineer; Messrs. Gates, Ross and Rich-



Grinder Exhaust System

Overcoming the time old obstacle of the troublesome fog in the grinder room has been recorded as a distinct achievement to the entire pulp and paper industry. The first basic principle of the Ross Grinder Exhaust System is to cure the trouble at its source and this it does by removing the vapor from inside of the grinder itself—taking the vapor from the grinder casing and stopping the leakage into the room.

The belching of vapor through openings in casings is prevented by an inward leakage of air from the room, and only a very small quantity of air need be admitted to replace this leakage into the casings. The system is low in first cost; operating cost; and eliminates the need for large exhaust and supply air ducts. It is now effecting remarkable results in many representative mills throughout the industry.

The Ross Grinder Exhaust System Is Equally Efficient For Pocket and Magazine Type Grinders. We Will Gladly Send Detailed Information On Request.

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NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

ards, of the Canadian General Electric Co., which installed much of the equipment in connection with the machine. A few days later the machine was again tested, and on the 19th it started on the regular production of newsprint.

The successful operation of this machine, which has a rated capacity of 210 tons of paper a day, is considered a triumph of modern engineering. Its erection was worked according to a definite schedule of progress, and four months ago officials set April 5 as the day of the initial test. The whole program worked out to the most minute detail, the machine being in complete condition for the test within the hour scheduled. The original plans of the Great Lakes Co., which is owned by the Backus-Brooks interests, call for a self-contained groundwood, sulphite and newsprint mill with an annual capacity of 100,000 tons of paper. At its present rate of progress it will not be long before the company achieves that objective.

The company has taken out permits for the constuction of three units, comprising the refuse boiler house, boiler and turbine room and dock, valued at over $900,000. The boiler and turbine house is being constructed at a cost of $625,000; the dock at a cost of $264,000, and the refuse boiler house at a cost of $24,500. Work on all three projects is going ahead rapidly. J. T. McLennan, general manager of construction for the Backus-Brooks Co., stated that the paper mill and other units of the plant will be completed by the first week in May. Construction work on plant trackage facilities and the dock will be pushed ahead steadily and should be ready for operation by July 15 of this year. The dock will be one of the biggest and finest in the lakehead harbors, being several hundred feet in length and capable of accommodating the largest vessels on the lakes. Practically half of the work on this project is now completed. Until curtailment of construction operations two months hence, the plant site will continue to be the scene of intense activity.

More Mills Projected

To utilize what is now waste material of the products of the forests of northwestern Ontario, which annually amounts to millions of dollars, and to use other raw materials of merchantable timber species, E. E. Johnson, head of the Pigeon River Lumber Co., Port Arthur, has announced plans for a number of mills to transform wood waste and other timber to salable product. The plan, as outlined by Mr. Johnson, is to manufacture little used varieties of native woods, such as jackpine, birch, poplar and balsam, into book papers, coarse and kraft papers, insulating and building boards.

An option has been taken on several properties in Port Arthur as proposed sites for the mills and the capital outlay will amount to approximately $3,000,000. Mr. Johnson said he had interested United States capital in the project. The company also has plans for the development of power on the Pigeon River. Application is to be made to the Ontario government for additional timber areas.

Reduce Campbell Award on Newsprint Deal

The appeals taken by the late E. A. Wallberg and the Lake St. John Power and Paper Co., Ltd., from the judgments of Justice McEvoy awarding to Charles E. Campbell, publisher, of Edmonton, Alta., a commission of one per cent on a contract for the sale of newsprint amounting to between $30,000,000 and $40,000,000, spread over a period of ten years, were allowed in the one case wholly and the other partly by the First Divisional Court at Osgoode Hall, Toronto.

The appeal by the defendant company is allowed and the action brought by Campbell against it is dismissed, both with costs. The appeal of Wallberg is allowed as to the amount, which is reduced to $10,000, with no costs to the plaintiff in the action or of the appeal. Chief Justice Mulock, dissenting, would have granted a new trial.

The contract for the sale of newsprint was made between the Lake St. John Power and Paper Co. and the Newspaper and Magazine Paper Corporation, New York, one of the Hearst organizations. Campbell claimed that he had a verbal contract with the late E. A. Wallberg providing for the payment of the usual commission if he should introduce Wallberg to purchasers of newsprint. Following this contract, made in a Toronto hotel in April, 1926, Campbell introduced Leslie H. Clarke, representing the New York corporation, to Wallberg, from which introduction, he alleged, the big contract for the sale of newsprint resulted.

Special Newsprint Carriers on Great Lakes

Vessels for Canadian owners figure to quite an appreciable extent in the shipbuilding revival now under way in British shipyards. While most of the vessels built for operation on the canals and Great Lakes are much of a pattern, there are indications of a distinct departure from type in some of the more recently placed contracts. For instance, the Quebec and Ontario Navigation Co., which is a subsidiary of the Ontario Paper Co., has just placed an order with Earle's Shipbuilding, of Hull, England, for a vessel specially designed to carry newsprint rolls. This vessel is intended to operate primarily between Thorold and Chicago, transporting newsprint from the Ontario Paper Co.'s mill for The Chicago Tribune. The dimensions are such as to permit of her being diverted to grain or pulpwood transportation through the St. Lawrence canals, but the vessel is specially adapted for the carriage of light bulk cargoes, and will carry much more newsprint than any other vessel of her size hitherto constructed.

Canadian Nashua Buys Waxed Paper Business

The purchase of the waxed paper business of the Dominion Envelope and Carton Co., Ltd., Toronto, and the removal of the machinery and equipment of the Toronto plant to Peterboro, was announced last month by John R. Marshall, general manager of the Canadian Nashua Paper Co. The Toronto firm has been the chief competitor of the Nashua company in Canada, and the transaction, it is stated, will make the Peterboro company one of the largest industries of its kind in the British Empire.

The waxed paper business of the Dominion Envelope and Carton Co. was just one phase of that company's activities, so that the company will still carry on its other lines, such as envelopes, cartons, etc., in Toronto where it has a large plant. The waxed paper business just purchased by the Peterboro firm is considered to be an extensive one, and the move to Peterboro is regarded as of marked importance in paper circles.

Recently Col. C. H. L. Jones, now president of the Mersey Paper Co., was the recipient of a unique tribute from his former associates in the Spanish River Paper Mills. This consisted of a beautiful leather book about 10 by 14 inches with hand-tooled red leather and gold cover and containing on the first page Colonel Jones' name and titles, followed by a full-page painting of himself and an illuminated and engrossed address of handwork, which in turn was followed by the signatures of some thousands of employees of the Old Spanish River company.

A suit for recovery of $450,000 from the Dominion Government has been instituted in the Exchequer Court, at Ottawa, by John R. Booth, Ltd., claiming the purchase price damages for the expropriation of 361 acres of land for extension of the Dominion Experimental Farm. The property was expropriated by the government last June, the company being awarded $122,400.

Bulk contract, less wiring, has been awarded to Roderick Campbell, Toronto, for the construction of a one-story brick and mill finish manufacturing plant, to cost approximately $25,000, at 314-318 King St., East, for Commercial Papers, Ltd.

Kilgours Ltd., manufacturers of paper bags, paper boxes, etc., one of Toronto's oldest paper products firms, is negotiating with the Toronto Harbor Commissioners for a site

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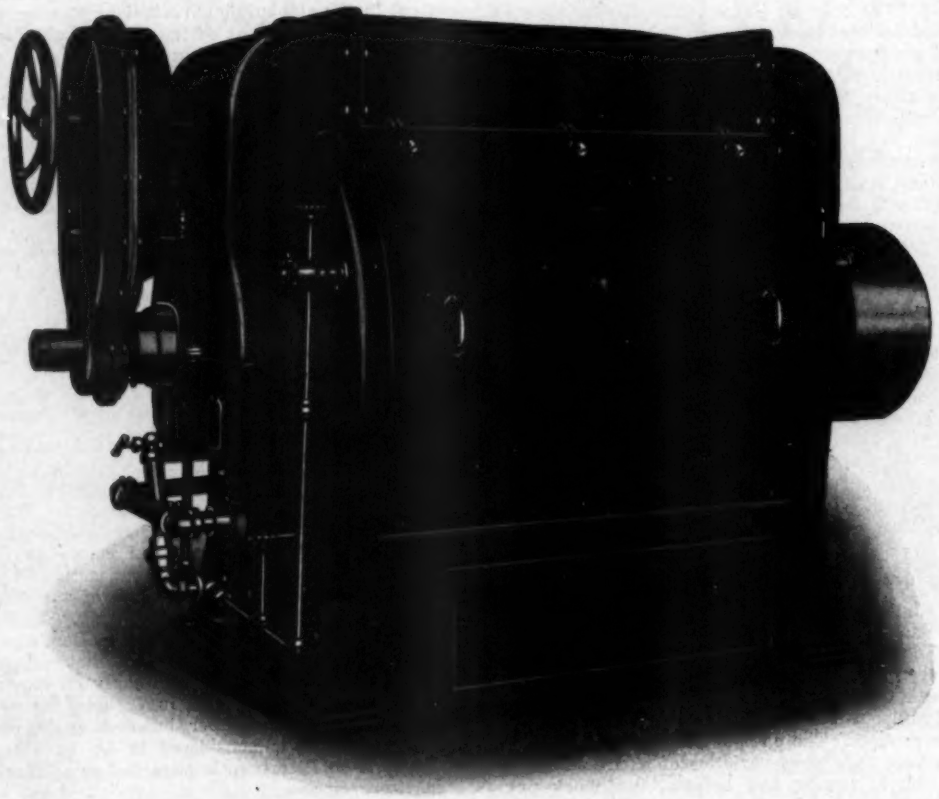

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east of John street, on the harbor front, for the erection of a seven-story warehouse, containing 140,000 square feet of floor area. Kilgours will be the fourth paper firm to locate on the city's waterfront.

Historic Mill Torn Down

The old paper mill at Dundas, one of the historic manufacturing establishments of that town, will disappear, and on the site will be erected a new high school building. While in operation, the mill turned out about six tons daily of manila rope and wrapping papers. Fisher Bros., who donated this property to the Dundas School Board as a site for the new high school, also gave the buildings and their contents. From the sale of this material the board hopes to derive a profit which will go toward financing the new building.

On the eve of the disappearance of this mill, citizens of Dundas will see the passing of a once famous industry in the city's industrial life. In the building was made paper of the finest quality, and the Gore paper mills, under the direction of Fisher Bros., reached a peak in Ontario's industry which was hardly equalled. Though one of the oldest paper mills in the Niagara Peninsula, the Gore plant was a comparatively new business in Dundas.

A good representation of executives of pulp and paper mills in the province was present at the annual meeting of the Ontario Pulp and Paper Makers' Saftey Association, which was held at the King Edward Hotel, Toronto, last month. Following the dinner, reports were read indicating an even more favorable record in accident prevention for 1928 than the preceding year. Trophies were presented to the winning safety competition teams, the McInnis trophy going to the Cornwall Division of Howard Smith Paper Mills, Ltd.

J. R. Forth, for some years an executive with the A. D. Shoup Co., Toronto, manufacturer of paper boxes, has joined the staff of Telfer Paper Box Co., Toronto, as sales manager.

Dr. Herman Rosenfeld, of Rheinische Papiermanufaktur, paper converters at Mannheim, Germany, recently visited a number of the paper mills in the Niagara district.

The plant formerly occupied by Superior Paper Mills at Thorold is now being remodelled by Schultz Construction Co., Ltd., Brantford, for the Brantford Roofing Co., which recently took over the plant. It is stated that the present paper machine is to be re-arranged and an 84-inch cylinder machine added. The Brantford Roofing Co. will operate the plant on the manufacture of roofing papers.

The Mille Roches plant of Provincial Paper, Ltd., was closed down for a week last month, during which time the Dominion Government had a force of men at work cleaning out the Welland canal.

Buscombe and Dodds, waste paper collectors from the printing and wholesale paper trade in Toronto, is considering the purchase of a site for larger warehouse space. The company recently put on four new trucks on pick-up and is handling 40 tons of waste paper a day. New balers have also been installed.

Howard Smith Paper Mills, Ltd., and Courtauld's (Canada), Ltd., welcomed a party of chemistry students from McGill University and Ecole Polytechnique at their Cornwall plants last month. There were nine students from each college, including special workers in the Pulp and Paper Research Institute. Officials of both plants explained the various processes to the students.

Members of the Ottawa branch of the Engineering Institute of Canada, to the number of 110, on the occasion of

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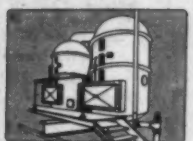

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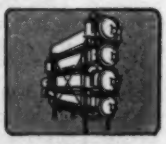

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their monthly meeting visited the main laboratories in Ottawa of the Forest Products Laboratories, Department of the Interior, and spent several hours viewing the modern equipment and methods of work of the institution, which was only recently transferred from Montreal to Ottawa.

It is reported that the Ferguson government is preparing a bill, to be presented before the Ontario Legislature next year, with a view to stabilizing the newsprint industry in that province.

Towards the end of last month Abitibi Power and Paper Co. put into operation a second machine at Espanola, making two machines now in operation of the six installed in the plant.

H. J. Rowley, who has been working at the Pulp and Paper Research Institute, in Dr. Hibbert's Department of Cellulose Chemistry, recently joined the research staff of the Abitibi Power and Paper Co., at Iroquois Falls. He has just been appointed director of the technical service, succeeding Dr. John Campbell, who is reported to have accepted a position with International Paper Co.

A meeting was recently held in Toronto between the Paper Trade Association and representatives of Alliance Paper Mills, Ltd., Provincial Paper, Ltd., Valleyfield Coated Paper Mills, Ltd., and Montreal Coated Papers, Ltd., at which satisfactory arrangements were made for the marketing of coated paper.

The Deakin Construction Co., Montreal, has secured from Howard Smith Paper Mills a contract for the erection of a $25,000 one-story addition to the boiler plant of the Cornwall mill. The work has already been put under way.

T. Batchelor and Raoul de St. Hilare have opened an office at 1434 St. Catherine West, Montreal, in connection with the introduction into Canada of the Delthirna sizing process, which was developed in France by two engineers of the Papeteries Navarre, Thiriet and Delcroix.

G. R. Lane, superintendent of the Provincial Forestry Station at Midhurst, Ont., has been appointed to the position of assistant to the chief forester of the Laurentide Division of Canada Power and Paper Co., for which firm he will be forester in charge of reforestation at Grand'Mère. Mr. Lane has already taken up his new duties.

❖ NEW BRUNSWICK ❖

Bathurst Expansion Progressing

Enlargement of the production of the Bathurst Power and Paper Co.'s plant at Bathurst is being rapidly carried out. The power supply from the Nepisiguit River power station owned by the Bathurst company, will be increased 50 per cent by the early installation of a third 5,000 hp. generator. The order for the generator includes transformers, switch gear, etc., which will ensure 50 per cent more power for the mills at Bathurst, power that will be delivered in time to take advantage of the fall freshets.

The company is also completing the installation of a third grinder motor of about 3,000 hp., which will increase the pulp output also by about 50 per cent. Installation of this machinery is expected to be completed within the next few weeks.

The annual number of forest fires, says Provincial Forester G. L. Miller, Fredericton, in the annual report, has decreased from 850 fires in 1918 to 107 fires in 1928, with a corresponding reduction in total damage from $72,266 to $4,673. Many factors have contributed to bring about these results, chief of which are the progressive amendments to the Forest Fire Act, development of an efficient personnel,

Full-Fibre Pulp

with

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Beater Filling

IT'S similar to basalt lava in its action, but it is not nearly so costly and it wears far longer. Hydrates pulp twice as fast as steel knives and does it without cutting the fibres. This is particularly important when strong long-fibred paper is wanted—so it is especially suitable for Kraft and wrapping paper. Made simply of cast iron with a porous lava-like surface. Beats thoroughly and quickly—and is made to fit any beater.

Bigger Production at Lower Cost

In actual tests—where machines, pulp and all conditions except the Filling were exactly the same—Helin Beater Filling produced *twice as much* hydrated pulp in the same length of time as did the steel knife filling.

Thus the capacity of the beaters is increased 100% and the power per ton of paper is reduced more than 30%. Add to this your better quality of pulp and you have real profitable economy.

To increase your volume—just equip the beaters you have with Helin Beater Filling.

The Famous U-BAR Barking Drum

Built to fit the job—Big production results from the special design and is insured by rugged dependable construction. The specially designed U-BARS of high carbon steel are joined securely to heavy ship channel rings with *multiple-rivet* joints —thus effective, clean barking.

Smooth rotation is the result of chain suspension with guide-rolls, sprockets and spring takeups of shock absorbers—hence *faster* rotation and BIG PRODUCTION.

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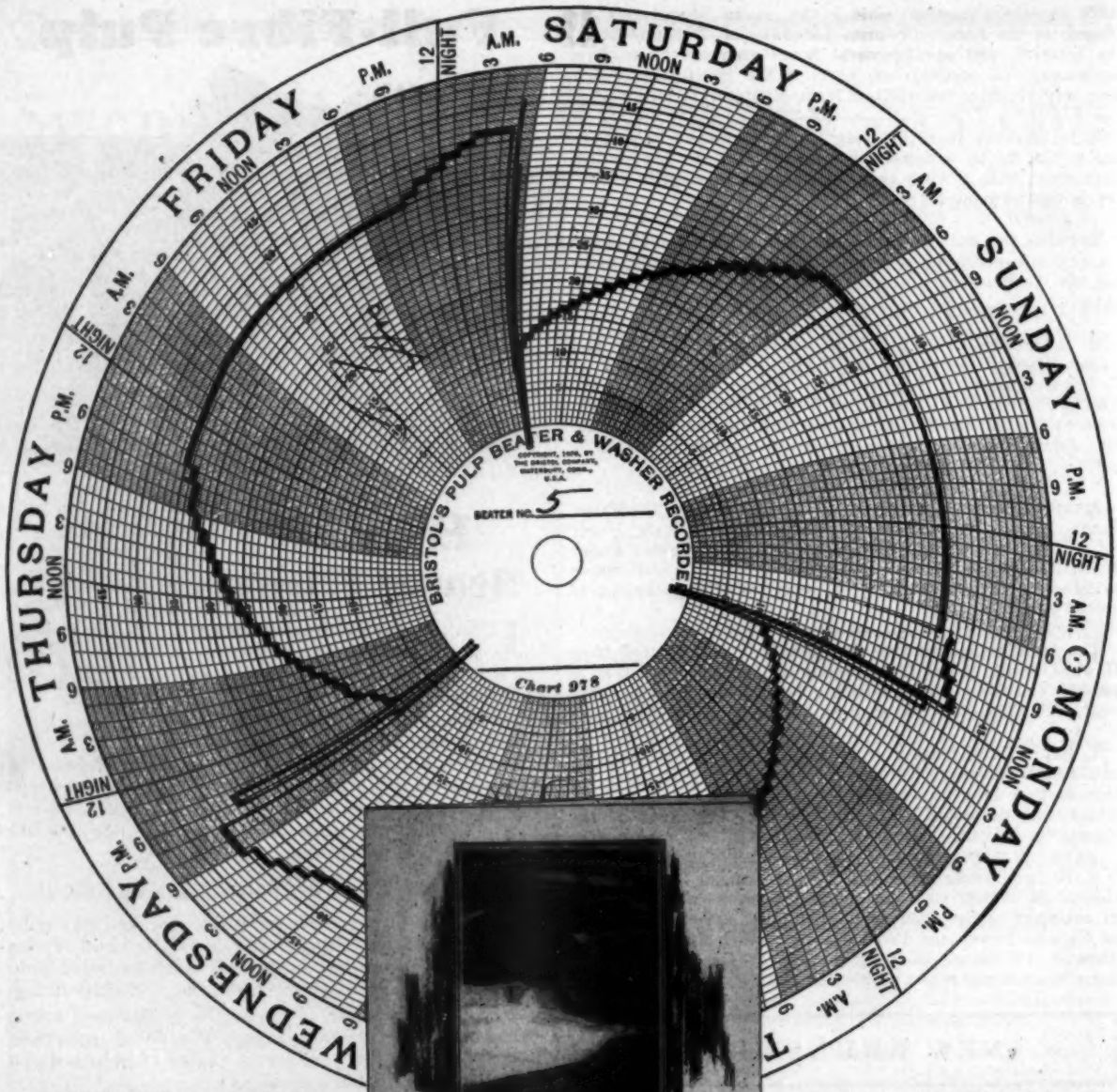
CHICAGO, U. S. A.

Canadian Barking Drum Co., Ltd., Drumond Bldg., Montreal

BARKING U-BAR DRUMS



*BULLETIN NO. 348

BRISTOL'S PULP BEATER RECORDERS serve not only to guide in obtaining better control of beaters, thus assuring more uniform quality pulp; but also make possible a very appreciable power saving.

In some instances for example, beater operators, especially those on the night shift; have the opportunity to drop the rolls down hard during the first few hours of the beat and then later on to lift the rolls and "take it easy."

In one mill, this practice required so much power at early stages in the beating, that water wheels could not handle the load and it was necessary to raise steam in the boilers. Then power consumption left the fireman with a full head of steam and no place to use it.

Where beater rolls are progressively lowered according to chart graduations, it will be plainly evident that chance of such power loss is minimized, and sudden high peak loads avoided. The representative chart record shown above illustrates how accurately each step of the beat can be traced and analyzed by those in charge.

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education of the public, and better methods of prevention, detection and suppression of forest fires.

The town of Dalhousie, where International Paper is constructing its first New Brunswick newsprint mill, has been authorized by the Legislature to issue $350,000 worth of debentures to take care of civic improvements required in view of the increased population the International plant will bring to the town. During the winter a force of nearly 700 men was engaged on construction of the mills, and with spring this was increased to more than 1500.

Confirmation has been given of an agreement on taxation questions between Fraser Companies, Ltd., via its subsidiary, the Restigouche Co., Ltd., and the county council of Restigouche, in connection with the new pulp mill at Athol, near Campbellton.

International Paper Co., of New Brunswick, which is to move its headquarters from Fredericton to Campbellton early this month, is reported to have bought a large building on the Champoux property on Roseberry St., which will be used for offices of the forest engineering and protective services. The company will have a staff of about 150 men in its employ in various departments, it is expected.

❖ NOVA SCOTIA ❖

Rights Granted to Mersey Paper

An arrangement of much significance to the Mersey Paper Co. has been arrived at in an agreement between that company and the provincial government. The company has been granted rights to explore all unalienated Crown lands in the province, with certain exceptions, and to select for operation such areas as will yield 1,000,000 cords of pulpwood in the next 30 years.

According to recent advice, the steel work is completed on the groundwood and sulphite mills being erected by the company at Liverpool, N. S., and it is reported that good progress is being made on the power developments of the Nova Scotia Power Commission, from which electric current will be supplied to the mill.

The Scott Paper Co., which operates an 18-ton groundwood mill near Charleston, Queen's County, has decided to erect a second mill at Mill Village, on the Medway River, eight miles from Liverpool. According to A. W. Broughton, manager of the mill, while the new mill will not be a major plant, it will be a great help to that section of the province.

❖ MANITOBA ❖

Extensive Developments Projected

According to word from Le Pas, preliminary negotiations are now proceeding between a company headed by Sir Reginald Baird, president of Lloyd's Bank, and the Manitoba government, which may lead to the development of White Mud Falls and the establishment of important industries in the neighborhood of White Mud. It is known that representatives of the company have been in that part of the country for some time quietly securing data regarding the amount of power available and the amount that could be sold in northern Manitoba. This data has been supplied to Sir Reginald and his associates, and it is expected that the question of the falls will be brought up in the Legislature during the present session. Development of the falls would mean an outlay of about $50,000,000 according to experts who have studied the problem, and the amount of power available without damming of the river is approximately 300,000 hp. It is stated that the plan of the English company is to supply power to all mining companies

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LAYING out and building this large 64 ft. dia. steel health tank (and medical locks to operate under 30# pressure) presented all the fabricating problems of rotary building plus many others more difficult to cope with. Biggs, with responsibility for accurate construction of this sphere, fabricated the job in its shops and erected it "on location." Every plate fitted with precision, and not one rivet was ordered cut out when the 60# test was applied.

Just as Biggs' accuracy and attention to details made possible the fabrication of this giant tank, so does the same dependability and painstaking cooperation with paper mills engineers produce Rotaries, Digestors, Tanks, Penstock and Pipe that are giving satisfactory operation in paper mills all over the United States and abroad.

Biggs first cooperation with paper mills executives dates back to 1887. During these 42 years Biggs has acquired broad experience and information which is valuable to the paper industry.

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With such pretested and proved lubricants, the work of Standard Oil Company (Indiana) Lubrication Engineers among industrial plants is not a matter of experimentation. Their recommendations are based on known quantities; thus they are able to solve many difficult lubrication problems and offer suggestions that, if properly followed, will unquestionably improve lubrication and do much to insure steady operation, lower maintenance cost, less overhauling of equipment.

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1416

now engaged in development work in the vicinity of White Mud, also the towns, including Le Pas and Cold Lake.

While the 300,000 hp. greatly exceeds the amount of power now required in the Cross Lake, Oxford Lake, Herb Lake and Cold Lake territories, it is understood the company has secured valuable pulpwood lands in the neighborhood and that it is the intention later to build pulp mills in the country, which would utilize a great deal of surplus power. A significant fact, and one which would suggest that news of the forthcoming application for the lease has leaked out, is that Winnipeg interests have been securing very short term options on property in the Cross Lake and Herb Lake vicinity. It is evidently expected that the matter will be brought to a head in the Legislature before the options expire.

A million-dollar strawboard and boxboard manufacturing plant in Winnipeg is being considered by the Hinde and Dauch Paper Co., which has been making additions to its plants in Toronto and Montreal. O. H. Moore, general manager of the company, is expected to arrive in Winnipeg in the near future to confer with J. M. Davidson, secretary of the Development Board.

Abitibi Seeks Larger Pulpwood Supply

A steady campaign for an enlargement of the reserved area set aside for selection of pulpwood is being carried on in Ottawa by the Manitoba Paper Co., which was taken into the Abitibi merger last year. At the time the agreement between the Dominion government went through, the selection area was cut down very considerably below the demands of the company, and it was reduced largely because of the insistence of the Bracken government. The company was to get approximately 6,000,000 cords of wood, to be selected in blocks, and it is now claimed that the area set aside for selection purposes has yielded not more than one-half the amount of wood stipulated in the agreement.

In discussing the pulpwood situation in Manitoba, Hon. Chas. Stewart, Minister of the Interior at Ottawa, while declining to express any opinion as to the accuracy of the statement of the company, expressed disappointment at the results of the pulpwood survey carried out last year in the northerly sections of the province outside the area reserved for the paper company. This survey, he said, showed that there was not more than 2,000,000 cords of wood in the Nelson River and Saskatchewan River area, which would be insufficient to warrant the establishment of a second pulpwood paper mill in the province.

The survey of the Department in the Davidson concession in the eastern and central section of Manitoba had disclosed much larger pulpwood resources than had been expected. There are 700,000 cords of pulpwood in the concession, according to the report of the engineers, and Mr. Stewart said that he would consult with Premier Bracken in regard to the disposal of this wood. It was his opinion that these 700,000 cords should be reserved for the Manitoba Paper Co. to help to bring their total wood supply close to the 6,000,000 cords desired. The wood, he thought, should not, however, be handed over to them, but should be leased in small blocks to settlers who desired to cut it. The paper company should be made, by agreement, to pay the going price for pulpwood.

❖ BRITISH COLUMBIA ❖

Tariff Rumors Delay Mill

Negotiations which may lead to a 100-ton pulp mill being located in the Queensborough district of New Westminster have been temporarily held up through rumors prevalent in New York that Ottawa was likely to retaliate in the event of the United States Congress planning an import duty on pulp.

C. D. Altick, Portland, Ore., who has been conducting the negotiations with the civic authorities, wired to Mayor Gray, of New Westminster, suggesting that pressure be brought to bear on Ottawa to have it announced that imposition of a

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Mechanical Draft Apparatus for Continuous, Dependable Service

duty on pulp entering the United States would be regarded as an unfriendly act and that retaliation may be required.

A site for the proposed pulp mill has already been arranged on the property formerly occupied by the British Canadian Lumber Corporation which borders on the entrance to Annacis Slough.

Improvements Being Made at Ocean Falls

Extensive additions will be made to the plant of Pacific Mills, Ltd., at Ocean Falls, this year. The big pulp and paper mill has been compelled to close down its kraft and newsprint departments owing to water scarcity, and one of the immediate improvements will be the raising of the height of the storage dam so as to lessen the possibility of a similar shortage occuring again. Steel has already commenced to arrive for this work, and the project is being rushed with all possible speed.

A new steam turbine will also be purchased and installed, and a new grinder room will be erected.

Another New Mill

Another pulp and paper mill is likely to be established in New Westminster in the near future. It is not definitely known if this is the same project as that for the revival of the old Poplar Island plant scheme, but it is known that it is distinct from the proposed plant to be erected in New Westminster city limits. It is announced that English capital is interested in the possibilities of establishing a plant near the east end of the New Westminster bridge across the Fraser River.

Immense stands of timber which contain fir and cedar, suitable for cutting, and also a low grade of these species, and of spruce and hemlock, are still available in the Dominion Railway belt. It is in connection with the second and third rate grades that English capital is interested.

R. Bell-Irving, manager of the plant of the Powell River Co., officiated recently at the pouring of the concrete for the base of the war memorial at Powell River. The monument was designed by John McIntyre, architect for the Powell River Co., and the major portion of the cost of the monument is being borne by the company.

Resulting from loss of contract for carrying paper from the Pacific Mills to California ports, the Canadian National Steamships has decided to withdraw from the Vancouver-California steamship service, and has advertised the three large steamships operated on this route for sale. Last year the contract was awarded a United States steamship company, and as this had for years been the major business handled by the government vessels, loss of the contract made the service a non-paying proposition.

Export business with the Westminster Paper Co., New Westminster, has been developing at a rapid rate during recent months. The firm is today shipping products to Australia, China, Japan and eastern Canada, and some European countries, as well as supplying a large domestic demand. The firm specializes in the manufacture of waxed bread wrappers, fruit wrappers, toilet tissues, napkins, towels, printed papers, waxed papers, and wrappings. The fleet of motor vehicles operated by the firm was augmented by a recent purchase of additional trucks.

R. Bell-Irving, mill manager of the Powell River Pulp and Paper Co., has been elected to the executive committee of the Technical Association of the Pulp and Paper Industry, to represent Pacific Coast interests. This is the first year in which the interest of the pulp and paper industry on the Pacific Coast has been given official and formal recognition by the organization.

Extensions are now being planned to the plant of the Sidney Roofing and Paper Co., near Victoria. It is proposed to call for contracts for erection of the additions decided upon almost immediately.

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◆ NEW ENGLAND ◆

I. P. Co.'s Policy Explained by President

The International Paper Co., has been drawing the attention of New England during the past few weeks owing to the publicity attendant on its two big moves here recently, the purchase of the Boston Herald-Traveler, probably the most influential newspaper in New England and the acceptance by the Legislature of Maine of the International's Fish River project which will involve a huge hydroelectric development on that tributary of the St. John River and the erection of mills at Van Buren, Me., and St. Stephens, N. B.

The testimony before the Federal Trade Commission on the day following his appearance before the Joint Rules Committee of the Massachusetts legislature by President A. R. Graustein clarified many points of I. P. Co. policy. Mr. Graustein made a clear exposition of the reasons for branching into the hydroelectric power field, explaining the highly valuable waterpower projects on the Connecticut River and elsewhere which can be effectively linked with steam plants in the larger centers to take care of peak loads. Even the Boston Edison Co., is now using power from I. P. sites. These plants are far more profitable than the paper mills at those points. The purchase of the Worcester Light Co., by the I. P. Co.'s New England Power Ass'n. is credited with being a prime reason for the retention of the American Steel & Wire Co.'s huge plant in that city.

As to the Herald, Mr. Graustein indicated that the International had gradually lost ground there its tonnage dropping from 10,000 tons of newsprint in 1927 to 5,000 in 1928. In the future, the two papers in the deal will buy all their 30,000 tons from the International. This will go a long way said Mr. Graustein towards maintaining full-time operations at several mills. Idle mill capacity he explained to the Bay State Committee is one of the potent causes of loss in paper mill operations.

It is believed that contracts are shortly to be placed for the construction of I. P. mills at Van Buren which will make sulphite papers and not newsprint, it is understood.

Traffic Items

The newsprint mills of Maine are greatly disturbed by various recent rate decisions. The St. Regis case to date has not been encouraging nor has the trend of the I. C. C., towards adopting mileage more frequently than any other measure for establishing rate scales. At the hearings at St. Augustine recently Andrew P. Lane, traffic manager of Great Northern Paper Co., representing, besides his own mills, the views of Pejepscot Paper Co., St. Croix Paper Co., and Cushnoc Paper Co., all of Maine, argued for a basis of rates not to exceed 80 per cent of sixth class which is similar to the proposal of the publishers. This view will be fortified by further arguments at the Minneapolis hearings.

Conferences were held during March at Portland, Me., between representatives of various Maine paper companies receiving pulpwood from the Provinces via steamer and Portland and traffic department officials of the Maine Central R. R. over the question of changing the method of rating wood pulp from a per cord to a per pound basis. The carriers contend after making many tests that the 4,000 pounds per cord which they had adopted as a theoretical average was not adhered to owing to the varying degree of moisture in the wood and also the amount of bark which held excessive water. Tests are to be taken on the first shipments this year and it is hoped that a fair per pound rate which will be made by converting the present per cord rate into pounds at 4,000 pounds per cord will be satisfactory to all receivers. The mills getting wood through Portland include D. D. Warren Co., Oxford Paper Co., Hollingsworth & Whitney Co., and International Paper Co.

One of the oldest paper mills in America, the old East Hartford Manufacturing Co., producers for many years of the famous "Charter Oak Bond" high rag content paper,

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"The construction used in this IXL Herringbone Speed Reducer is as pretty a demonstration of engineering and mechanical skill as you can hope to find."

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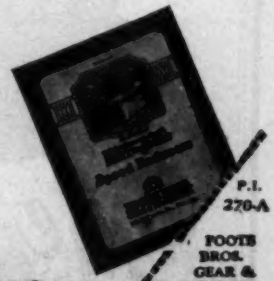

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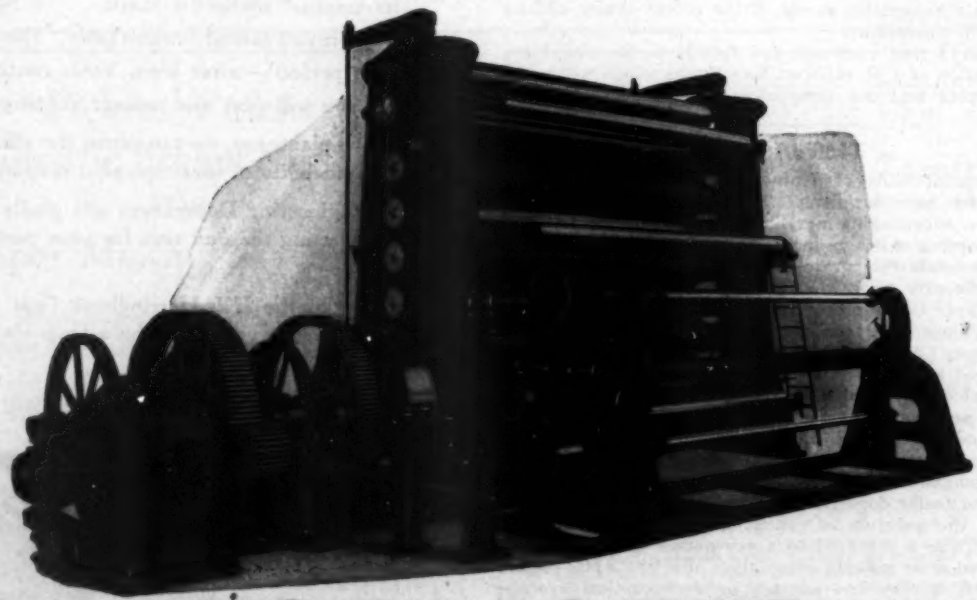

The HOLYOKE MACHINE COMPANY

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which refused to enter the American Writing Paper Co. combined back in 1900 has definitely ended its career as a unit in the paper industry. The machinery has been sold and the mill is to be used for furniture manufacturing.

The Babbitt Kelly Paper Co. mill at Bellows Falls, Vt., which only recently began operations in the old International Paper mill there has made its first shipments of Manila paper and intends to gradually increase output. It is equipped with much new machinery including new and rebuilt beaters.

A wet end for one of the Tileston & Hollingsworth Co. machines is under order at the plant of Rice Barton & Fales Co., of Worcester.

Munroe Felt & Paper Co. Sold

The Munroe Felt & Paper Co., a manufacturer of kraft paper and kraft specialties for many years at Lawrence, Mass., which was controlled and largely owned by the late James B. Munroe, has been sold to represntatives of Bulkley Dunton & Co., wood pulp importers of New York City. The business has been incorporated under Massachusetts laws as the Munroe Paper Co. It is understood that Vincent R. Hann is president. The death of T. E. Allen for many years general agent of the mill two months ago followed closely by the deaths of Mr. Munroe and then by his wife, left no heir who had been closely identified with the business and as the Bulkley Dunton Co., has long been familiar with it through furnishing much of the kraft pulp used, the sale was a most logical one. The Boston office at 77 Sumner St., has been discontinued.

Representatives of the Hammermill Paper Co., in conjunction with the Charles A. Esty division of Carter Rice & Co., entertained the Worcester Club of Printing House Craftsmen at dinner last month, followed by discussions of printers' problems and a showing of the Hammermill film, "The Voice of Business." The meeting was held at the Worcester University Club.

Representatives of Arthur D. Little, Inc., Cambridge, Mass., have been making an investigation of the unloading apparatus for china clay steamers which was installed about a year ago by the Mystic Terminal Co., at their Charlestown wharves in Boston harbor. The apparatus performs its function of unloading quite satisfactorily but there appears to be some difficulty at the mills owing to the amount of air with which the clay is saturated in the unloading process which operates on a suction principle. This does not injure the clay one bit but the method of measuring the various ingredients for the beaters by volume requires adjusting on this account.

Important agency changes in Boston for leading mill brand or watermark lines include the naming of Cook Vivian Co., as agents for Systems Bond made by Eastern Manufacturing Co., and giving these distributors a complete line of eastern papers. Martine Cantine Co., has also announced the appointment of Cook Vivian Co., as agents for its coated paper. A new paper, "Mardi Gras," an exceedingly snappy sheet with a finish consisting of colored specks obtained by sprinkling confetti on the sheet before it is dry, has been given to Knight Allen & Clark Inc., of Boston. This is an American Writing Paper Co., line.

The report is current in Boston that rag content papers have made their best sales showing since the war from January to April. It is reported that the first quarter of 1929 shows increased rag paper production and sale, and decreased sulphite bond and ledger production and sale.

The S. D. Warren Co., introduced to the trade this year a new low-priced paper in the machine finish field which they call New England M. F. It is designed to meet modern needs for a paper which has a good finish, will take halftones, can be used for bulk work, is better than the very cheap competitive unbranded m. f. papers on the market and

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"Made in Manitowoc"
has it!

NO matter what your handling problem may be, a Moore Speedcrane can take care of it, economically and quickly. It is rapidly converted into Shovel, Dragline or Trenchoe. The Moore Speedcrane "Made in Manitowoc" can be imitated but not duplicated.

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(Sole Licensee to manufacture and sell Moore Speedcranes and Shovels)

SPEEDCRANE
MOORE • MANITOWOC
SHOVEL — CRANE — TRENCHOE — DRAGLINE

is nevertheless available at a low cost. In New England it has made an immediate appeal. Local distributors believe it has a large future. The mill maintains machinery operating on this one grade continuously and thereby reduces its own costs to the minimum.

Connecticut Valley Supers Meet in Holyoke

The Connecticut Valley Division of the American Pulp and Paper Mill Superintendents Association held an unusually instructive and novel meeting in Holyoke May 4, in co-operation with the Printing House Craftsmen and the Super-Craftsman Club. John J. White, chairman of the division, presided at the business sitting which was opened in the assembly room of the Nonotuck Hotel at 2 P. M. Robert C. Fay was introduced as the representative of President S. L. Willson, of the American Paper and Pulp Association and the American Writing Paper Company. Mr. Willson was on his way to the Pacific Coast and could not be present, but through Mr. Fay he assured the gathering that he was in hearty accord with the purpose of the meeting.

Problems in the ruling departments of various paper converting firms were brought up for discussion when Henry J. Toepfert took charge of the meeting and after reciting some of his own experiences called on those present to state their problems. Representatives were present from the ruling departments of several industries and the narration of their experiences was highly illuminating. Previous to this Francis McSherry, formerly superintendent of schools of Holyoke and now treasurer and manager of the Smith Tablet Company, read a very complete and interesting paper on the history of ruling machines. The paper treated of the early types of ruling machines as well as the newer modern inventions.

Some excellent specimens of ruling were exhibited by the National Blank Book Company and a good discussion ensued on the many problems of ruling stationery. J. A. Reinz gave an informing talk on the Reinz ruling machine. The meeting lasted two hours and half. All present came together in the evening for a dinner which was followed by dancing. The attendance numbered upwards of fifty.

The New England Corrugated Box Co. has purchased a plant at Milford, Conn., formerly operated by the Stanford Steel Products Co., and will use it in conjunction with its nearby plant for the manufacture of corrugated board. New England Corrugated Box Co. has a large plant at this point making shipping cases and other corrugated products.

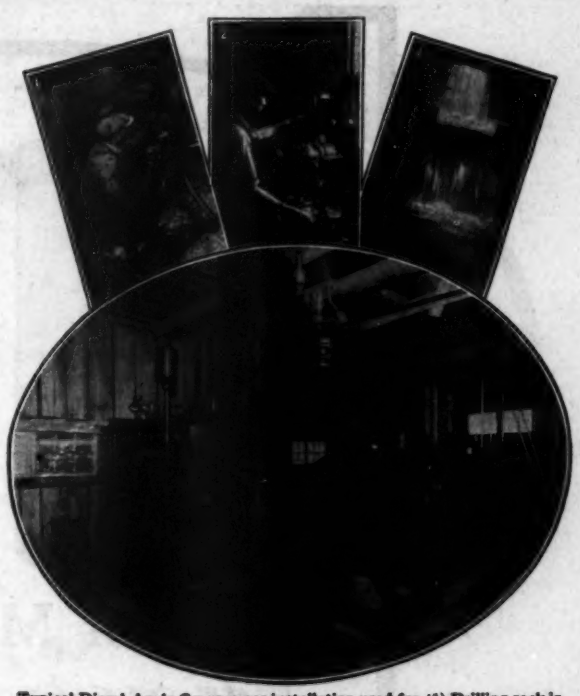
The Kalamazoo Vegetable Parchment Co., and the Patterson Parchment Paper Co., have taken their case to the U. S. Circuit Court of Appeals from the District Court of Massachusetts where decision of $65,000 against them was reached by jury who heard their case and that of the complainant, Story Parchment Co., of Trenton. The defendants excepted the refusal to set aside verdict and the treble damages. May 1st was the last date for filing of exceptions.

L. L. Brown Paper Co., of Adams, Mass., have disposed of the "paper mill village" in West Cunningham, Mass., to persons from Northampton. The old mill there was dismantled last year. The paper makers had owned the property for 75 years.

General Fibre Box Co., of West Springfield, Mass., has awarded a contract for the construction of two buildings at its plant. An addition on Palmer Avenue is also contracted.

Raleigh B. Adams, technical superintendent of Stowe & Woodward Co., of Newton Upper Falls, Mass., died suddenly April 14th. He had a host of friends in the paper and pulp trade for whom his company manufactured extensively. He had frequently spoken before the American Pulp and Paper Mill Superintendents' Association. He was 57 years of age.

Leading consumers of old rope have received a better demand for their rope papers this year than in many years



Typical Diesel-Angle Compressor installation used for (1) Drilling rock in a tunnel; (2) Testing air brakes; (3) Pumping water by Sullivan Air Lift.

A new factor in Low Production Costs—

Diesel-Angle Air Power

Oil power hurls a challenge to electricity and steam—in the Diesel-Angle air compressor.

Leaders in many industries are installing these new air power plants—which team the savings of Diesel power, with the economies of Balanced Angle Compressors.

Each Diesel-Angle plant consists of a compressor and engine exactly matched, and designed by specialists. Balanced Angle design makes direct connection simple, and insures dependable service.

This new booklet, No. 83-L tells how leaders in many industries save money with Diesel Driven Balanced Angle Compressors

In a Chicago railway shop, a Massachusetts marble quarry, an Illinois water works, a New York subway, and in many other places — Diesel-Angle compressors have replaced other installations at savings ranging from $500.00 to $1100.00 monthly.

Investigate the economies of Diesel-Angle air power. Capacities 313 to 2553 cu. ft. per minute.

Send for the new illustrated booklet, No. 83-L.

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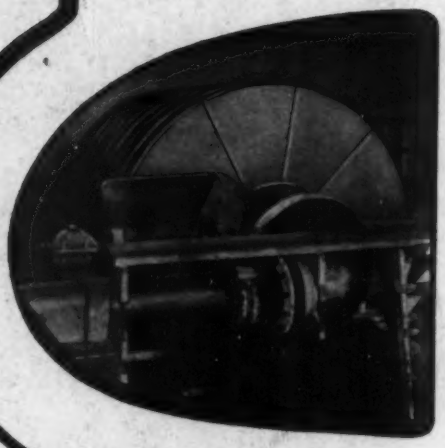

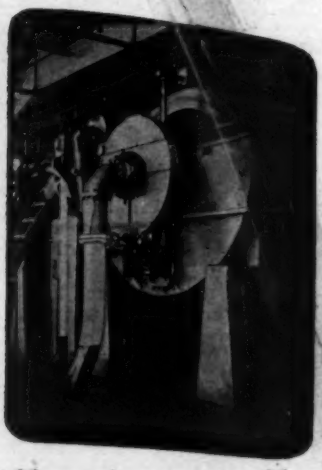

One Group of Mills Annually *Saves* $5,216,615 in Fibers

. . . another group *loses* $6,389,167

NOT long ago, a broad survey* was made in the pulp and paper industry as to the steps taken to save the fibers going to waste.

Based on replies covering about 46% of the total tonnage, it was conservatively estimated that one group of mills is saving annually over and above all charges $5,216,615. Another group is still losing $6,389,167.

The mills making these large savings are in most cases using modern up-to-date Save-Alls such as Oliver United engineers have installed in so many mills.

The mills now losing more than $6,000,000 annually should most seriously consider putting in Oliver United equipment to change this material loss into a gain.

*From "Profit and Loss in Fiber Utilization" by T. M. Baker, Engineer, American Pulp and Paper Association. Paper Trade Journal, September 20, 1928.

OLIVER UNITED FILTERS INC.

Successor to Oliver Continuous Filter Co. and United Filters Corporation

SAN FRANCISCO, Federal Reserve Bank Bldg. — NEW YORK, 33 West 42nd St. — CHICAGO, 565 W. Washington Blvd.

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past which is directly responsible for the strength in the raw material. Of recent date 5 and 5.25 dock has been paid for choice foreign rope, although the bulk of it is being bought at 4.50 to 4.75. The domestic market is about 5 shipping point.

Champion Fibre Co., of Canton, N. C., is sending to New England this month from its Boston office, 201 Devonshire street, a complete sample collection of its lines made. Sales-manager William M. Benzing of the Canton mill was in Boston during the week of the 16th.

At the New England Coal Dealers Ass'n at Springfield, Mass., last month, Consolidated Paper Bag Co. of Cambridge, Mass., Josephson Bag Co. of Bridgeport and H. W. Carter Paper Co. of Springfield presented attractive exhibits of paper coal bags.

The New Maine board mill, the Forrest Paper Co., at Yarmouth which occupies the old mill of the S. D. Warren Co. there, and has been incorporated under Maine laws, plans to make paper board, corrugated and fibre shipping cases, folding boxes and specialties. It has a 108-inch and a 62-inch cylinder machine which are to be re-equipped, it is said. Ralph O. Dale is secretary and M. L. Hersey treasurer.

It is reported here that Riverside mills Nos. 1 and 3 of the American Writing Paper Co., which have been idle and on the market have been sold to the Zeloid Products Co., for the manufacture of transparent wrapping paper, presumably glassine. It is said that capital of two millions is behind the business which will start with around 10,000 pounds a day output which will be gradually increased.

Samuel G. Garrigan, for seven years with the Continental Bag & Paper Corp., Rumford, Me., resigned April 30. Mr. Garrigan first started with the Great Northern Paper Company and has also been employed by the International Paper Co. Seven years ago he became sulphite superintendent at the Continental and last year was made superintendent of the paper division. He has not announced his future plans.

Case & Marshall Co., of Burnside near Hartford, Conn., is constructing an addition to its plant.

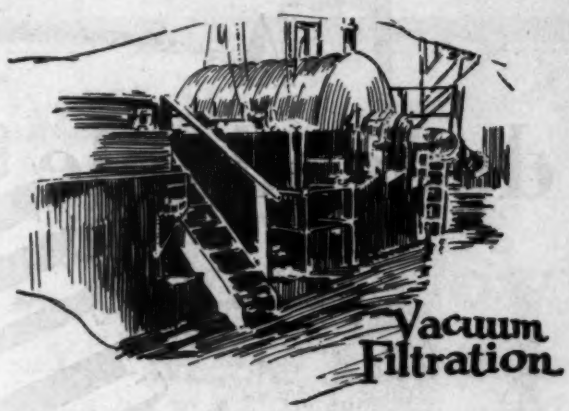
❖ NORTHERN NEW YORK ❖

Announcement has been made by R. B. Maltby of New York, vice president of the St. Regis Paper company, of the removal of the purchasing and traffic departments of the company from Watertown to New York. The operating offices will remain in Watertown. Joseph A. Quinlan of Watertown, traffic manager of the St. Regis company, and J. Bryce Eakin, purchasing agent, are already established in their New York offices. A branch office of the purchasing department will be maintained in Watertown, and Corwin T. Jewell, general manager of the company's newsprint mills and assistant treasurer of the company, will maintain his offices in Watertown where he will be close to the mills.

Dexter Sulphite Completes Addition

Additions and improvements being completed by the Dexter Sulphite, Pulp and Paper Co., of Dexter, make the company's plant one of the largest individual sulphite mills and the fourth largest paper bag mill in the country. A large section of the new addition is now in operation and the section for bleaching the sulphite pulp product of the company will be ready late this month.

When in full operation the plant will have a capacity of 100 tons of sulphite daily. This is an increase of about 40 per cent over the present output. About half of the pulp manufactured will be bleached by the latest process, whereas none is now bleached. The capacity of the bag factory will be 3,500,000 paper bags each nine-hour day. These bags



Dependable Vacuum Pump Service

The success of a vacuum filtration installation, as well as any other process requiring the producing and maintaining of vacuums, is very dependable on the suction producer. It must have characteristics suited to the requirements of the installation.

The Connersville Cycloidal Vacuum Pump, because of the action of its rotating impellers, produces a positive suction, and within the range of requirements in the majority of installations offers a service that is economical in power and maintenance costs. Sturdy design and construction are guarantors of dependable operation.

Bulletin 20B has just been issued describing Cycloidal Pumps for normal vacuums of 15 in. mercury and maximums of 20 in. It will give you detailed information about these pumps. Send for a copy.

The Connersville Blower Company

Kentucky Ave., at 16th Street

Connersville, Indiana

Branch Sales Offices are maintained in the Monadnock Block, 53 W. Jackson Blvd., Chicago, and at 114 Liberty Street, New York, and the Chamber of Commerce Building, Pittsburgh, for your convenience in obtaining information about our products. Give them a ring.

CONNERSVILLE

Blowers · Gas Pumps · Meters · Cycloidal Pumps

A dependable source of supply

SPUR GEAR ▼

▲ MITRE GEARS

IN JONES you have a dependable supply source for whatever gears you need. Ample production facilities and specialized equipment, backed by many years of intensive gear-making experience, has established an excellent reputation for dependability.

If you need spur gears, worm gears, bevel gears or mitre gears—cut or molded—in steel or cast iron—send us your order with specifications. You will get quick service at a reasonable price. A Jones Gear Catalogue with price list and complete gear information in simplified form will be a constant help to you. Just write for it.

▲ WORM GEARS

Jones Industrial Gears

W. A. JONES FOUNDRY & MACHINE COMPANY

Main Office and Works: 4436 W. Roosevelt Rd., Chicago

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are made in 17 different sizes and of various grades of paper. There are 36 bag-making machines, many of which have a capacity of 20,000 bags an hour.

The addition just being completed is 180 by 100 feet and consists of two stories and a basement. Some of the machinery in the old buildings will be removed to the new plant, and the older structures will be used as warehouses. The new building is of concrete and steel fire proof construction.

Some of the bleached product is used at the company's plant in Dexter in the manufacture of numerous lines of waxed paper for bread and fruit wrappers and food containers. As soon as the construction work is completed, a large personnel will be required to operate the plant.

Forestry Notes

A forest of 1,000,000 Norway spruce trees is being planted by the Malone Light and Power Co., of Malone, on the company's land south of the Titusville reservoir district. The company has carried on an extensive reforestation program for many years. Last year a million trees were set out on a tract above Chasm Falls. A large force of men is employed in planting the trees under the direction of George Fayette of Malone.

A large reforestation is being carried on by the Niagara, Lockport and Ontario Power Co. on their properties in Oswego county in order to insure the supply of water for power development in the Salmon river. About 600 acres of denuded land still remains to be reforested, and a crew of 40 men is now at work planting Norway spruce and red pine. Professors Paul D. Kelleter, G. H. Lentz and Frank B. Myers of the New York State College of Forestry, Syracuse University, are supervising the work.

St. Lawrence University, Canton, is planting 70,000 trees on land owned by the university under the supervision of Floyd M. Callwood as the first step in the reforestation project made possible by the gift of $100,000 by the Floyd L. Carlisle company of New York City, which controls many paper and power companies throughout Northern New York. Spruce, white pine and red pine trees are being planted.

Bates Valve Plant Will Be Moved to Oswego

Announcement has been made by Floyd L. Carlisle that the entire machine factory of the Bates Valve Corporation of America, acquired by the Carlisle interests in February, is to be moved to Oswego from Chicago.

In a speech made before the Oswego chamber of commerce Mr. Carlisle said: "The Bates Valve bag machines are used all over the world. The machine shop is being brought here to get it nearer central operations of our interests. The ground for the new building will be broken very soon." Mr. Carlisle went to Oswego April 18, the day after a testimonial dinner in his honor was held at Carthage where a new bag plant has just been put into operation by the Taggart Brothers Paper Bag Corporation, a Carlisle company.

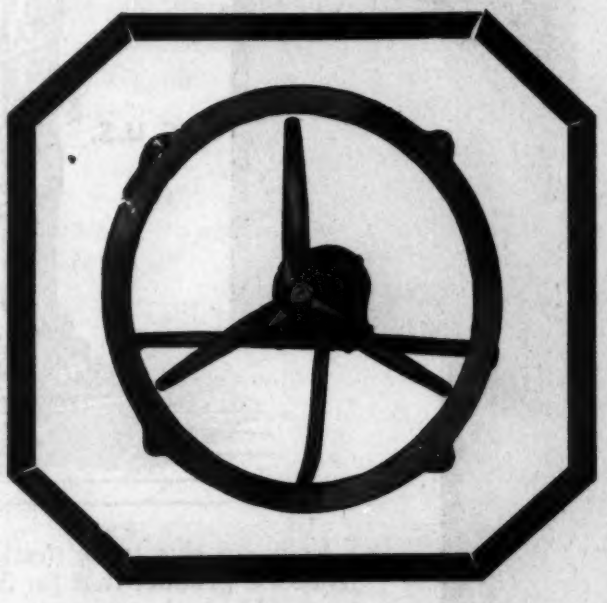
S. B. Wardwell, of Watertown, has been re-elected president and treasurer of the West End Paper Co., of Carthage. Other officers and directors of the company were renamed as follows: O. A. Miller, vice president; A. F. Wardwell, secretary; S. B. Wardwell, A. F. Wardwell, John Sterling, Frank Augsbury, R. J. Buck, C. H. Anthony, C. A. Miller, J. C. Stebbins and R. J. Stebbins, directors.

C. W. Valentine has been re-elected president of the Bagley & Sewall Co., of Watertown, manufacturer of paper machines. E. S. Lansing and C. E. Kinnie were again chosen vice presidents; C. D. Bingham, treasurer, and C. L. Thompson, assistant treasurer and secretary. The members of the board of directors were re-elected as follows: C. W. Valentine, E. S. Lansing, C. E. Kinnie, C. D. Bingham and C. L. Thompson.

A verdict of $1,430.62, the full amount sought by the Improved Paper Machinery Company of Nashua, Me., in a

Install Your Ventilating Fans Now!

Hot Weather Makes Steam and Acid Fumes Unbearable



Meier Nu-air
TRADE MARK REGISTERED

Fans are made entirely of aluminum — not affected by steam or acid. They are equipped with Oversize Special-Built Fully Enclosed Ball-Bearing Motors. Their aeroplane type propellers will move more air [from ducts as well as in the open] than any other fans of their size. Made in sizes to meet every requirement.

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Meier Electric & Machine Co.
Inc. 1904
136 S. Meridian St. Indianapolis, Ind.

The Symbol of Quality and Service

Look for this trade mark on felts and jackets. It designates a product that for 38 years has been the standard for quality and service.

Many mills today prefer Appleton Felts and Jackets because of their quality and service. Appleton Felts and Jackets are made from high grade pure wool in a plant that actually controls its production by checking and rechecking all details from the time wool comes into the plant until it goes out a finished felt.

Let us help you solve your felt problems.

APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

Appleton
Felts and Jackets

breach of contract action against the West End Paper Co., of Carthage, has been directed by Supreme Court Justice E. N. Smith of Watertown.

Over 50,000 cords of pulpwood, the winter cut from the Copley tract in the East Antwerp region, have been driven down the Indian river to Philadelphia where it was loaded onto flat cars for the short run to the Island Paper company mill at Carthage. Fifty men were employed in the drive. Scores of persons watched the drivers as the logs went rushing down the river through Antwerp. The same amount of pulpwood will be cut on the Copley tract next year.

The sales department of the National Paper Products Co., which has been for some years located at Carthage, has been moved to New York City. John A. Frost, a member of the sales staff, has already left Carthage. He will make his home at Orange, N. J.

Jeremiah Mahoney, superintendent of the sulphite plant of the Algonquin Paper Co., of Ogdensburg, lost his left arm recently as the result of an accident at the plant when his arm was drawn into some gears.

William Foicey, fireman at the plant of the Unity Paper Mills, Inc., at Potsdam was painfully burned April 19 when his arm struck and opened an exhaust valve allowing steam to envelop him while cleaning the flues.

Purchase of complete machine shop equipment marks another step in the expansion of the Coty Machine Co., of Watertown, manufacturer of paper bag machinery. The new machinery is now being installed in the Coty factory, and it will be used for the manufacture of bag making equipment. Officials of the organization report a brisk demand for the bag machinery.

Walter Warner of Raymondville has been elected president of the Northern New York Papermakers' Council. Other officers are: Ernest Lampson, Gouverneur, vice president; Leslie Murtaugh, Deferiet, secretary; Kyler Paul, Norfolk, treasurer. The annual meeting was recently held at Gouverneur.

The first pulpwood boat of the season is expected to arrive at the Ogdensburg terminal of the International Paper Co. about May 15, according to Acting Manager George S. Sears. A large amount of wood for the International mill at Pyrites will be handled this season.

Earl Couglar, safety engineer of the Pyrites plant of the International Paper Co., has been given a position in the manufacturing department of the company's offices in New York City. Mr. Couglar, who has been employed at Pyrites for 14 years, will be succeeded by Rene C. Dompnier, a member of the Pyrites office staff.

Edwin Olmstead of Carthage, who has been employed at the St. Regis Paper company mill at Harrisville, has been promoted to the central offices of the St. Regis in New York City.

Coty Bag Corp. to Increase Production

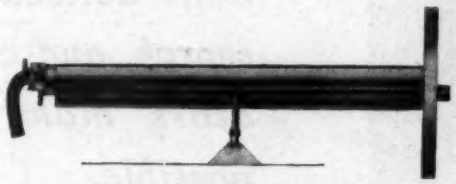
The Coty Bag Corporation of Watertown, which is controlled by the same interests as the Coty Machine Company, has launched into a heavy production of paper bags of all kinds, and late in April a night force was employed. D. S. Walton & Company of New York City, distributor of Coty products, has requested that production be increased to at least one carload shipment a day, and that additional machinery be built to provide double this increase output within three months. The New York City company has contracted to dispose of the Coty Corporation's entire output of bags, specifying minimum net sales of $2,000,000 per year. The contract grants the Walton company the right to appoint a

CLEAN FELTS mean LOWER COSTS

Consider what it means to have your felts continuously clean and soft. The felts absorb more water, enabling you to maintain pressure on the press rolls. This, in turn, relieves the dryers, to a large extent, and has the effect of increasing dryer capacity. An increase in dryer capacity permits you to run the machine faster, achieving the much desired increase in production.

Furthermore, by keeping your felts clean, you are able to maintain maximum speed throughout the week.

The SCOFIELD FELT CONDITIONER installed on your paper machine increases production and lowers costs by eliminating shutdowns for washing or the roping of felts.



The SCOFIELD FELT CONDITIONER is designed for application to any felt and for use on machines making all grades of paper—from finest tissues to boxboard.

Many mills are using this method of felt conditioning. Why not get in line and secure the same remarkable results they are getting?

We will gladly furnish full particulars

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.
ALBANY, N. Y.

Over Fifty Years

Experience in the manufacturing of wires for American and Foreign paper makers and the ever increasing use of Appleton Wires testify to their quality.

Looms of our own design, wire drawn in our own plant to specifications derived from exhaustive research, and carefully trained operators make this high quality possible.

Appleton Wires
are good wires
APPLETON WIRE WORKS INC., APPLETON, WIS.

director of the Coty Bag Corporation, this director to be also on the finance committee of the corporation. Lester Hemins has been appointed general manager of the Coty corporation.

NEW YORK CITY

New York's New Paper Center

It might well be said that the new New York Central Building at 230 Park avenue, New York, has become a new paper center in the metropolis, since quite a number of prominent paper and pulp concerns have moved into the new structure since it was completed a few weeks ago.

Included among the companies that now have their offices in the new building are H. G. Craig & Company, in Suite 1208-12; the New York & Pennsylvania Company, in Suite 1437-51; the Oxford Paper Company, in Suite 2301-10 and also Suite 2322-24; the Eastern Manufacturing Company, in Suite 2311-21; the Mead Sales Company, in Suite 1344-63; the Stora Kopparberg Corporation, in Suite 1506; the West Virginia Pulp and Paper Company, in Suite 1301-34; the St. Lawrence Valley Paper Company, in Suite 2805-14, and the Masters Craft Paper Products Company, in Suite 1215.

Parsons & Whittemore, Inc., wood pulp and paper importers and exporters, have moved their offices from 299 Broadway to larger quarters in the uptown pulp and paper district at 10 East Fortieth street, New York.

Among the tenants now installed in the new Chanin building, located at the corner of Forty-second street and Lexington avenue in New York, are the Kimberly-Clark Company, the Manufacturers Paper Company, the Pan American Pulp and Paper Company, and the Spruce Falls Paper Company, each of whom has moved recently from various locations in this city to the new building.

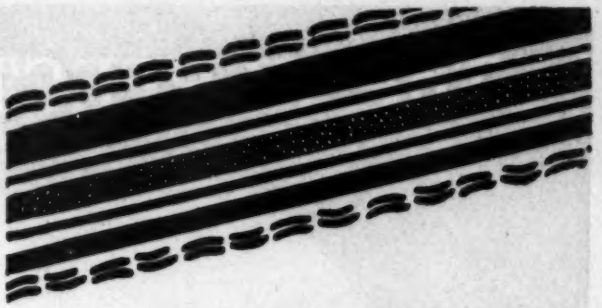
H. L. Samson, formerly vice president and general manager of the Domestic Mills Paper Co., of 555 West Twenty-seventh street, New York, has severed his connection with that company to represent the Horberg Paper & Fibre Co., of Green Bay, Wis., in New York City and nearby territory. Mr. Samson has opened offices in the Bush building, 130 West Forty-second street. Officers of the company now are: B. D. Riegel, president; J. L. Seiler, vice president, and M. L. Seiler, treasurer and general manager.

The William G. Willmann Paper Co., of 51 Beekman street, New York, one of the oldest paper jobbing houses in the metropolitan district, has leased the entire building at 530-536 Canal street and will remodel and improve the structure for its new quarters.

The Gross Paper Co., of Newark, N. J., has just been incorporated under New Jersey laws with a capital stock of $75,000 to deal in paper. Samuel J. Kauffman, of Newark, represents the new corporation.

W. B. Gibson, formerly connected with the New York City office of the S. D. Warren Co., has become associated with the Dill & Collins Co., as field representative in the New York territory. In this work he will be associated with M. D. McQuade.

Announcement was made a few days ago that Fred G. Marquardt, formerly with the Marquardt-Hewitt Corp., of 16 Ferry street, New York, has become associated with the Walker-Goulard-Plehn Paper Co., Inc., of 448-450 Pearl street, New York, as manager of the latter concern's paper mill supplies department. Mr. Marquardt is widely known in the mill supply trade and among paper manufacturers. The Marquardt-Hewitt Corp. is being liquidated. The Walker-Goulard-Plehn Paper Co., Inc., is successor to the old Maurice



ORR Felts

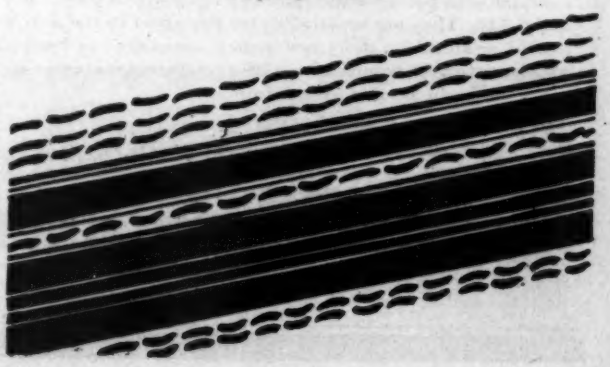
A complete line including endless felts up to 86 feet in length. Unusual ability to remove water and do it fast. Several extra days service before being discarded as proven by recent comparative mill tests.

Describe your felting conditions and we will supply the felt to meet them.

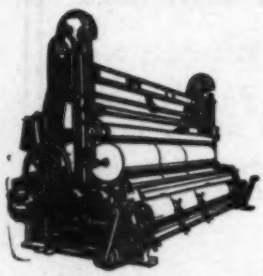
Send that next order to Orr.

The ORR FELT & BLANKET CO.

Piqua, Ohio



The PERFECT ROLL is a NECESSITY!



Firm, Accurate and Flawless Rolls of Newsprint or Magazine Paper Are Essential for Economy and Efficiency in the Pressroom.

Pressroom Officials will Boost Mills Making the Best Rolls

Every paper mill aims to produce Perfect Rolls. Where rolls are not properly wound to withstand the bumps and jolts in transit from the mill to the pressroom dissatisfaction is in store for the product of the mill in proportion to the trouble in the pressroom. Pressmen will not contend with poorly made rolls any longer than they are obliged to. They are responsible for their part in the process of producing a daily newspaper, magazine or book which are turned out under conditions of speed and punctuality as to hours and even minutes.

A reasonably good roll enables the press to operate at fair speed. With better rolls the results are proportionately better, and with a Perfect Roll the press can function at the peak of production.

CAMACHINE Roll-Winders are the result of progressive design to meet the requirements of the modern paper mill in economic roll production, and still more important, they are designed to produce rolls which the pressman will welcome in his pressroom and boost the mill supplying them.

Without Roll Quality Paper Quality is Hampered

CAMERON MACHINE COMPANY

61 POPLAR STREET **BROOKLYN, NEW YORK**

O'Meara Co., established in 1855 and for many years among the leading paper jobbers and paper mill supply houses in the country.

❖ WISCONSIN ❖

Mills Enjoy Good Business and Plan Expansion

Spring, with its improved marketing demand, has brought increased activity in Wisconsin paper mill centers. Twenty-five girls have been added to the crew of the Bates Valve Bag Co. division of the Hoskin-Morainville Paper Co., Menominee, Mich., in order to kep up with the demand. Likewise a night shift has been put on by the Menasha Wooden Ware Co., Menasha, to fill the increasing number of orders in its new corrugated paper container plant, started about a year ago.

Two large mills now inactive are expected to commence production within a short time. Overhauling of the two mills of the Badger Paper Mills Co., of Peshtigo, formerly the Peshtigo Paper Company, is nearing the end and the newly organized company will then begin to supply the market. The Kimberly-Clark Corp., Neenah, has taken formal possession of the former Sears, Roebuck & Co. mill known as the Lakeview Paper Company, Neenah, and has begun changing its equipment to convert it from catalogue paper to specialties. The mill was bought from the Fraser Paper Company, New Brunswick, Canada, temporary holders of the property, after accepting a large paper contract from Sears, Roebuck & Co.

Large scale expansion in the novelty wrapper field is planned by the Milwaukee Printing Company, Milwaukee, following a court victory which will prevent the hampering of its sales by competing companies. Facilities of its Milwaukee plant will be doubled and the company also will arrange for branch factories in the east, the extreme west and in Canada. The present force consists of 375 persons.

In the decision rendered by the United States district court of Illinois, the Shellmar Products Co., of Chicago, is restrained from manufacturing or selling a type of wrapper which is a combination of the opaque and transparent, or "window" type. The suit was brought by the Allen Qualley Co., of St. Paul, Minn., owners of the patents. This company has given the Milwaukee Printing Company the exclusive right to manufacture and sell the wrapper, involving sales well up to $3,000,000 a year. With the field thus protected against competition, the Milwaukee Printing Company will so situate itself that a national demand for these wrappers readily can be supplied.

Among the new corporations formed recently is the Paper Package Corporation, Appleton, capitalized at $25,000.00. The company will deal in paper, paper boards, paper boxes, labels, specialties and novelties. Plans are somewhat indefinite as to establishing a plant. The incorporators are E. J. McMurchie, owner of a printing plant at Neenah, and Harry J. and Carl J. Kahler, of Appleton. The capital consists of 250 shares of common stock with a par value of $100.

Minor expansion arrangements have been made by the Central Paper Company, and the Edgewater Paper Company, both of Menasha. The former is building a warehouse addition costing $4,000, and the latter a warehouse unit costing $1,000.

Building activities have been started by the Hoskin-Morainville Paper Company, Menominee, Mich., on the new building which will double the capacity of the Bates Valve Bag Company unit of this company at that city. The contract has been awarded to John Salen & Son, of Menominee. A complete new unit of bag machinery is to be installed, for the exclusive manufacture of the Multiwall cement bag, and for the development of bags for packing sugar and flour.

The Banta Publishing Company, Menasha, has operations well under way on an addition 90 by 150 feet which will house a box factory, machine shop and storage. The contract was awarded the Fluor Brothers Construction Company, of Oshkosh. A new sidetrack also is being installed.

HUM-MER
Electric
CHIP SCREEN

Here is an electric screening machine that will screen wood chips rapidly, efficiently, and at low cost.

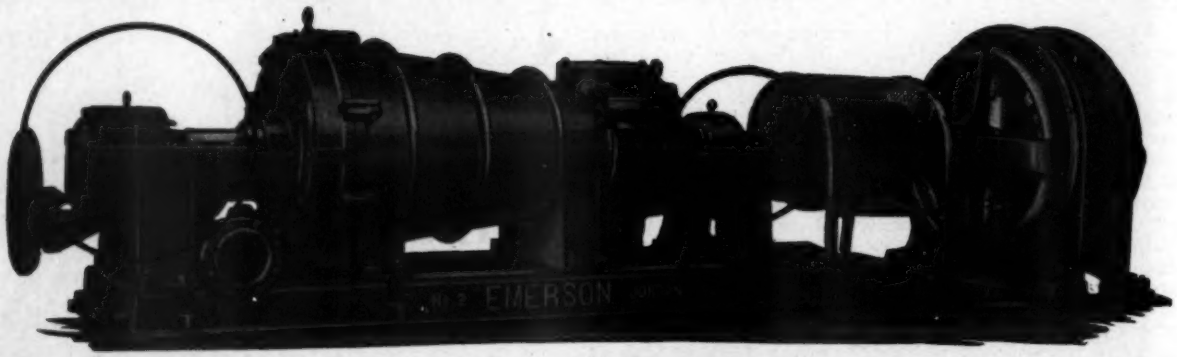
The intense electric vibration of the Hum-mer, combined with the cascaded arrangement of the screening surfaces, turns the wood chips over and over.

The entire mass of chips is agitated, resulting in an exceptionally efficient sorting and cleaning action.

The W. S. Tyler Company
Cleveland, Ohio
Manufacturers of Woven Wire Screens and Screening Equipment

TYLER
FOURDRINIER
CYLINDER
CORDUROY
WIRES

The EMERSON JORDAN *equipped with the* Bolton BANDLESS Plug



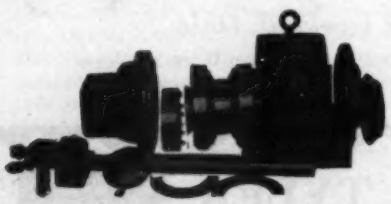
Showing construction of the Bolton Bandless Plug. Knives and woods cannot come out. *NOTE INVERTED WEDGES*

Now every Emerson Jordan offers you the tremendous advantages of the Bolton BANDLESS Plug and Timken Roller Bearings.

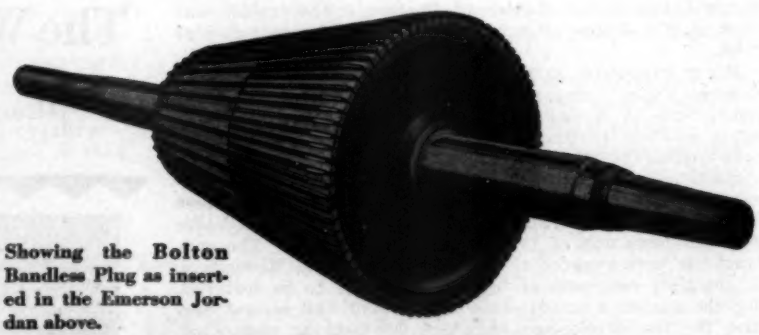
These two great features put the Emerson Jordan in a class by itself for unit control, lasting satisfaction and true economy. No other Jordan has these great construction advantages.

Make sure of all the benefits and savings that result from these two wonderful improvements in Jordan engineering. Standardize on Emerson Jordans.

Write for full information and estimates



Detail of Timken end bearing which takes care of both radial and thrust.



Showing the Bolton Bandless Plug as inserted in the Emerson Jordan above.

The EMERSON MANUFACTURING COMPANY

LAWRENCE ∞ ∞ ∞ MASSACHUSETTS

DIVISION OF JOHN W. BOLTON & SONS, Inc.

2683

Consolidated's Unemployment Plan Operating

Under the unemployment compensation plan announced recently by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., skilled men receive $75 a month while idle during shutdowns. Employees also are grouped in four other classes which receive $65, $55, $40 and $30 a month, respectively. Many of the employees already have benefitted by the plan because the company's mill at Biron, Wis., was idle for quite a period after February 1st.

The Consolidated mill signs the union wage agreement every year, and this compensation plan was worked out jointly between the management and officers of the pulp and paper unions. They co-operate to make it effective. Men who are entirely idle during shutdowns receive the full amount of their allowance, which is approximately one-third of their regular wages. If they do part time work, they file a statement to that effect and the amount they have earned is deducted from their check. If their temporary earnings elsewhere exceeds their allowance, they do not draw any. The unions assist the company in checking up on the men doing work elsewhere, and if any employee fails to report outside earnings, he is barred from participating in the unemployment wage plan.

This step by George W. Mead, president, has stirred up considerable comment and is expected to spread to other mills. The plan is not yet permanent with the Consolidated company.

O'Keefe-Orbison Has New Engineers

Two engineers have been added to the well known firm of the O'Keefe-Orbison Engineering and Construction Company, of Appleton, which has been in existence for the last forty years. E. C. Nelson has been made vice president and treasurer, and Walter H. Gmeiner, secretary. The president is O. C. Smith, who has been identified with the company for thirty years.

Mr. Nelson formerly was in the engineering department of the Kimberly-Clark Corporation, Neenah, Wis., and with James L. Carey, Chicago. He more recently was assistant chief engineer of the Longview Fibre Company, Longview, Wash., a position he left to join the Wisconsin firm. Mr. Gmeiner has been plant manager of the Appleton Wood Products Company for the last ten years. Previously he was in charge of construction for Whitney-Stein Co., of Denver, Colo., and was city engineer of Grand Junction, Colo., at the time a municipal water plant was built.

The O'Keefe-Orbison company has specialized on paper and pulp mills and hydroelectric developments.

Recent promotions announced by the Victory Bag and Paper Company division of the Marinette and Menominee Paper Company, Marinette, include: Floyd O. Avery, factory suprerintendent for the last ten years, transferred to one of the new mills of the Continental Paper and Bag Corporation in the south; John Dory, assistant superintendent to superintendent to succeed Mr. Avery; John St. Laurent, from foreman of the automatic department to assistant superintendent. Paul J. Sievert will have general supervision over both the bag company and the M. & M. company mills.

Fifty men will be employed all through the summer by the conservation commission of Wisconsin to plant trees in the cutover country in the northern part of the state. They will set out about 3,000,000 white and Norway pines, according to C. L. Harrington, state forester. This is in line with the reforestation plans of both the state and private industry, in order to save the timber supply. The Federal Government will be encouraged to increase its forest preserves in the state. It is estimated that management of this kind is needed on 18,000,000 acres of land. Steps also will be taken to provide a nursery in the southern part of the state so as to better supply the demand for trees for transplanting.

Rudolph Meyer has resigned as manager of the Marathon Paper Mills Company's mills at Ashland, Wis., and will be-

37

Repeat Orders on

DAYTON High Speed BEATERS

in the Various Robt. Gair Mills

April 29, 1926, Robert Gair Company ordered their first Dayton—just one—and on trial. Did that first beater live up to the claims advanced for it?

Here is what the various Robert Gair inventories show today on repeat business:

10 for their Thames River Div.
12 for their Haverhill Mill
9 for their Piermont Mill
6 for their Tonawanda Mill

Superintendents who may be inclined to buy on price alone are reminded that it isn't how much you pay as much as what you get that counts. They are also urged to sound the superintendents of any, or all mills, using Daytons as to their ability to nail down the claims advanced for them.

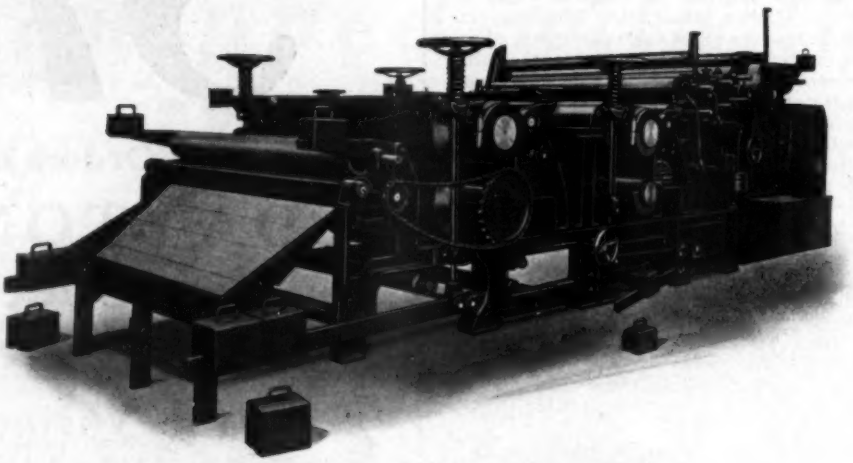
The Dayton Beater & Hoist Company
Dayton, Ohio

E. K. MANSFIELD CO.,
501 Fifth Avenue
New York City

The Claims:
Heavier furnishes
Faster beating
Greater output
More uniform product
Saving in power
Saving in labor

DAYTON HIGH SPEED BEATERS

THE 1929 ROGERS WET MACHINE*



USING THREE OR TWO FELTS
GIVING 48% A.D. PULP IN SHEETS

*equipped with A. D. Wood Double Sealing Collars.

Keeping abreast of the times—

1. Longer rolls to save Felt edges.
2. Top press rolls in roller bearings to save Felts and Power.
3. Double Sealing Collars to save Felts, Power and Fibre.

And also—

New type easy acting clutch, bearings and journals of ample capacity, and interchangeable parts to save repairs. A well designed machine and worthy of investigation.

1929 Activities in the South include:—

NORTH CAROLINA	One Machine
TENNESSEE	One Machine
ALABAMA	One Machine

GLENS FALLS MACHINE WORKS

GLENS FALLS, N. Y.

E. K. MANSFIELD CO., 501 Fifth Ave., N. Y. C. **Eastern Representative**

come manager of the Badger Paper Mills Company, Peshtigo, Wis. He is succeeded by Henry Josephs, former manager of the Daniels Manufacturing Co., Rhinelander, Wis. C. W. Hoeper, of Chicago, has been elected assistant treasurer of the Badger company and will act as sales manager.

Heavy Demand for Beloit Machines

The Beloit Iron Works is operating night and day on the preparation for shipment of five large machines which shortly will be installed in such widely separated sections as Alabama, Massachusetts, the state of Washington, and Mexico. This firm has been building papermaking machinery for use in all parts of the world for upwards of 70 years.

Four hundred men are employed upon them and the in and out tonnage of raw materials and finished product is about three million pounds a month. Approximately 150 freight cars will be required for the shipment of one of the machines alone.

A cable order was recently received for a pasting machine that will go into a mill in Finland.

Shipments already have begun on a large machine for Mobile, Alabama where it will be put into the production of kraft paper in large quantities. The factory is also beginning shipments on a machine that will be installed in the plant of the San Rafael Paper company at the foot of Mount Popocatapetl, not far from Mexico City, Mexico. The product of this machine will be both newsprint paper and fine bond paper.

W. L. Davis, president of the Dells Pulp and Paper Company, of Eau Claire, Wis., is recovering from an emergency operation for appendicitis, performed while he was at St. Petersburg, Fla.

F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis., has been elected a director of the newly organized Wisconsin Chamber of Commerce.

The Badger Paper Mills, Inc. sent a delegation of twenty employees to the Safety First meeting held recently at Marinette. Two hundred fifty employees of this vicinity attended the meeting.

Officials of the Oshkosh Wrapper Co., in order to eliminate any shutdown due to high water in the Fox river, took emergency steps and tore away part of the framework of the conveyor, so that the low section of the pit wall could be filled in with concrete.

Three hundred employees of the Kimberly-Clark, Neenah, mills attended a safety meeting held here in the recent past. The evening program consisted of short talks on safety projects by company officials.

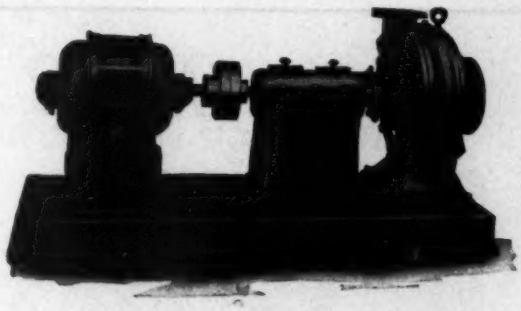
Richard Radasch of the Thilmany Pulp and Paper company, Kaukauna, spoke on the subject "The Romance of Pulp and Paper" at the weekly meeting of the Rotarians of this city.

Malloch to Speak at Supts.' Banquet

Delegates who attend the annual convention banquet of the American Pulp and Paper Mill Superintendents Association at Wausau, June 6, 7 and 8 will hear an address by Douglas Malloch, of Chicago. Mr. Malloch is a noted poet and humorist, and will appear at the Rothschild park pavilion, the beautiful gathering place for large summer dinners and social events. D. C. Everest, of the Marathon Paper Mills Company, Rothschild, and past president of the American Pulp and Paper Association, will be the banquet chairman.

Two special trains already have been announced, one making up at Philadelphia and another at Chicago. About 900 delegates are expected.

Two paper mills in the vicinity of Wausau were forced to discontinue operations recently due to the high water in the Wisconsin River. The Marathon paper mills at Roths-



Warren
Stuff Pumps cut cost of moving stock

Competitive performance tests on stuff pumps were conducted by a large mill prior to purchasing new equipment. Comparison of test results proved the efficient, economical operation of Warren Stuff Pumps, led to an order for 12.

Designed by engineers thoroughly familiar with the problems of handling stock, Warren Stuff Pumps move stock up to 6% consistency quickly, efficiently, without clogging and without requiring a lot of attention. It will pay you to investigate the savings that can be made in your mill. Let us send you the facts.

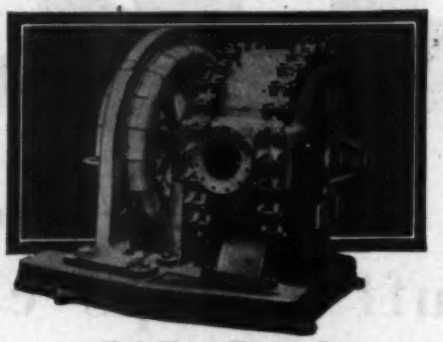
Warren
Steam Pump Company Inc.
Warren Massachusetts

Atlanta Boston Charlotte Cleveland Dallas Kansas City New Orleans New York Oklahoma City Philadelphia Pittsburgh San Francisco Toronto Scranton Seattle St. Louis St. Paul

2910

. . . this 2 in 1 feature—

saves power and space



Nash Hytor Vacuum Pump. For flat boxes, wires, felts and suction rolls. Capacities up to and exceeding 5,000 cu. ft. per min.

TWO pumping units are combined in one casing in the Nash Hytor Flat Box Pump. The rotor of the air unit handles air only—no water enters to impair its efficiency—a high vacuum is maintained with a minimum of power. The centrifugal water impeller receives water only. An even volume of discharge is maintained against the necessary head. No fluctuations in consumed power occur.

The compactness achieved by this design, plus direct synchronous motor drive permit ease of installation in limited spaces.

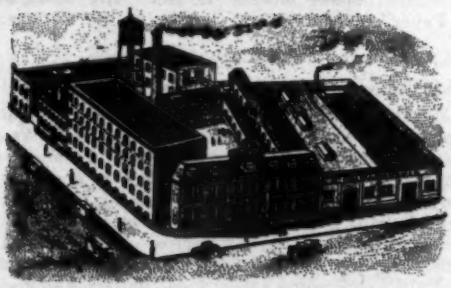
Write for Bulletin No. 40

NASH ENGINEERING COMPANY
161 Wilson Road South Norwalk, Conn.

Nash Hytor
VACUUM PUMPS AND COMPRESSORS

THE WM. CABBLE EXCELSIOR WIRE MANF'G CO.
MANUFACTURERS OF
SUPERIOR FOURDRINIER WIRES
Docking Wires
Cylinder Faces & Washer Wires
Red Brass Brush Wire

For 80 Years we have specialized in the manufacture of brass Fourdrinier Wires, Cylinder Covers, Washer Wires and Save-all Wires as well as Phosphor Bronze Fourdrinier Wires and Cylinder Covers.



Established 1848

Offices and Warehouses:

74-88 Ainslie St.
143-151-163 Union Ave.
160-162 Union Ave.

BROOKLYN,
NEW YORK

child closed down all but one machine while the Brokaw mill closed down entirely. The plants were not flooded but power was too low to run them. The Mosinee Paper mills were not affected by the high water because of their high location and equipment.

OHIO

Interesting Meeting of Miami Valley Supers

The Miami Valley Division of the Superintendents Association met at the Hotel Anthony Wayne in Hamilton, Ohio, Saturday evening, April 27.

In the absence of W. W. Galloway, H. T. Randall, vice chairman, presided. The secretary, M. L. Barker, read the minutes of the previous meeting. Mr. Randall introduced a resolution of thanks, which was voted, in appreciation of the refreshments provided at the social meeting in Dayton, Ohio, on April 6, by the Shartle Brothers Machine Company of Middletown and the Simonds, Worden, White Company of Dayton, Ohio.

Papermaking in Europe

John Traquair of the Research Department, Meade Pulp & Paper Company, Chillicothe, Ohio, spoke on papermaking in European countries, Scotland in particular, of which country he is a native and most familiar. He had samples of various grades of paper made in Scotland and passed them around for inspection. The paper made in Scotland is practically all made of esparto grass which they import from northern Africa and southern European countries for almost a song. He stated that esparto has a much finer fiber than wood and makes a very smooth printing paper, in fact, a machine calendered sheet made of esparto is equal or better than the coated and super-calendered sheet having a ground wood basis. This, together with the fact that they have wonderfully clear water of the mountain streams which is next thing to distilled water, enables them to make a sheet of the very finest paper made and at a reasonable cost. The nearest we have to esparto in America is soda pulp but which does not give the smoothness and finish as that of Esparto. Their method of calendering is somewhat different as they use from 3 to 5 stacks of calenders per machine with 3 to 7 rolls per stack. Mr. Traquair's talk was very much appreciated by the members which was evidenced by their applause.

Principles of Minton Drying System Explained

Geo. H. Spencer, of the Minton Vacuum Dryer Corp., showed a number of slides detailing the construction of their system of drying. Mr. Spencer explained they have now seven machines in operation or under construction with the vacuum system of drying. On April 23, of this year a machine was started in the mills of Price Brothers, Ltd., and from all indications was free of mechanical defects. They pulled 28 inches of vacuum at the very start. By the aid of the pictures Mr. Spencer pointed out principles of the operation and taking the talk as a whole the following advantages were outlined:

(a) The dryer section need contain only ½ the number of dryers to produce the same tonnage or conversely the tonnage can be doubled with same number of dryers.

(b) The drying process very closely approximates 100 per cent Thermal efficiency.

(c) No vapors are set free in the machine room. No hood is needed. Roof of machine room may be of ordinary construction, and there will be no rotting of the roof.

(d) All the heat used to dry the paper is returned in the form of heated water in the hot well of the condenser and may be used where needed in the mill.

(e) Positive technical control of drying both as to rate and temperature which is independent of weather conditions, making for uniformity of product.

Mr. Spencer's talk was to the point, thorough, and en-

A lifesaver for wires

CLEANING wires with acid is a costly practice. Not only does acid shorten their life, but also leaves surfaces in a roughened condition so that they accumulate dirt rapidly. Cleaning is needed more often.

You can avoid this uneconomical method and clean wires thoroughly and safely with Oakite materials. Every particle of foreign matter is quickly removed. Wires are left clean and unharmed in any way.

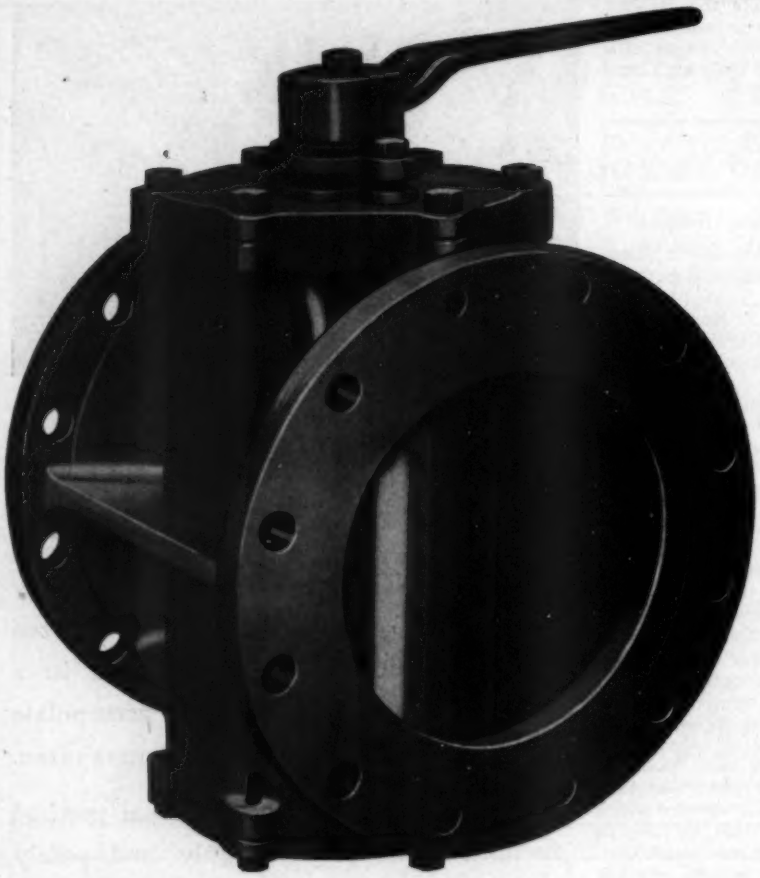
Oakite's characteristic speed and thoroughness save money on other paper mill cleaning jobs, too. Felt washing is speeded up; cylinder rolls, screen plates and screens kept in perfect condition with little effort.

Write for our booklet "Oakite in Paper Mills". You will find it full of helpful suggestions. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of U. S. and Canada

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods



Why Buy an 8 Inch Valve and Get Only 6 Inch Capacity?

Barker Quick Opening Valves give you full capacity—an 8-inch valve has an 8-inch capacity.

Barker Quick Opening Valves are full opening —the opening area is equal to that of the pipe drain—that's why you get full capacity. That's why you need order only the size you need to get that capacity—an 8-inch valve for 8-inch capacity; 6-inch valve for 6-inch capacity, and so on.

Aside from this advantage of Barker Quick Opening Valves, they are so constructed that the handle is attached to the valve. It cannot fall off, but the all steel extra light handle is so made it can be bent for unusual positions. And, this valve has a special packing arrangement so that the least friction is developed against the action of the rotor. It is an easy opening valve that requires little effort to operate.

What are your valve problems? Send us pipe line sizes, and we'll gladly send complete details and prices—without obligation. Write today.

Green Bay

GREEN BAY BARKER, MACHINE & TOOL WORKS

Machinery Manufacturers

Green Bay, Wisconsin Sault Ste. Marie, Canada

BARKER QUICK OPENING VALVES

lightened the members considerably on the subject of vacuum drying.

The next meeting will be held Saturday, May 18, at the Hamilton Inn, Franklin, Ohio, at which time Mr. Thomas H. Savery of Chicago will talk on, "Vacuum Pumps and Save-alls."

❖ PACIFIC COAST ❖

WASHINGTON

The position of superintendent of the sulphite pulp mill of the Schaeffer Box Co., Tacoma, recently made vacant by the resignation of E. A. Shirley, has been filled by R. A. Sipes, formerly sulphite superintendent at The Hawley Pulp and Paper Mills in Oregon City.

Pacific Coast Mills to Add Equipment

A bond issue of $50,000 for the purpose of raising funds to finance the installation of new equipment, has been approved of by the Pacific Coast Paper Mills at Bellingham. J. J. Herb, who has been president of the company since he and associates took over the mill in 1926, is also president of the Westminster Paper Mills, Ltd., at New Westminster, B. C. Elmer Herb is sales manager of the concern.

Included in the new equipment which is to be completely installed by mid summer, is a beater, screens, a jordan, additional dryers and additional towel folding equipment, and a toilet winder. The buildings are amply large to hold the additional equipment which will increase the daily capacity of the mill 18 tons.

The new equipment for the Camas plant of the Crown-Willamette Paper Co. which is undergoing an expansion program, has begun to arrive, a new high speed bag machine with a capacity of 250 completed bags per minute, from Brooklyn, N. Y., being among the first to arrive.

OREGON

The Sitka Spruce & Paper Co., Empire, is going ahead rapidly with the construction of its new 75 ton sulphite mill which will be completed in about 60 days. Construction of the second Willamette digester is expected to be completed this month, the first having been completed in March. Each digester is 16x52 feet and weighs 80 tons. J. B. Wilt supervisor of mill construction, recently returned from the east where he purchased equipment for the mill. C. McC. Johnson and associates, Oregon lumbermen, are behind the project and are constructing a sawmill with a daily capacity of 125,000 board feet to be operated in connection with the paper mill.

Northwestern Stockholders to Raise Funds

Stockholders of the Northwestern Pulp and Paper Co. meeting in Astoria April 30, decided to undertake to raise $150,000 additional money upon the representation by the board of directors that such a sum would insure carrying out of the contract for a 120-ton pulp mill on Youngs River near that city by H. O. Schundler of New York.

This move came about as a result of a report by the secretary, G. C. Fulton, that $258,000 had been expended but only $25,000 of the amount for construction work and that considerable had been spent without the authority of the board. B. T. McBain, former executive vice-president, took issue with the statement that the expenditures of some of the money had been without authority, claiming that he and other members of the executive committee had authority for all expenditures.

A committee was appointed to investigate the affairs of the company thoroughly and report back at a later date. This committee consists of: Burr E. Tatrow, Oregon City; E. H. French, The Dalles; W. O. Wood, Ranier; James L. Hope and O. K. Atwood of Astoria.

The stockholders decided upon raising the additional $150,-

YOUNGS
-TOWN
TANKS
Special Steel Plate Work for the Paper and Pulp Industries
We are capably equipped for special steel plate construction up to 2" thick for the paper and pulp industries, covering the following uses:
SODA AND SULPHITE DIGESTERS
HIGH PRESSURE TANKS
GLOBE AND CYLINDER COOKERS
RIVETED STEEL PIPE
LIME DRYERS
ELEVATED STEEL WATER TANKS
STORAGE TANKS (all capacities)
Our engineers will gladly submit plans and estimates.
Write for free copy of Bulletin 15
THE YOUNGSTOWN BOILER & TANK CO.
YOUNGSTOWN, OHIO
Offices in Principal Cities
Youngstown
TANKS

TRADE MARK REG. U.S. PAT. OFF.

"No calender can be better than the rolls in it"

Calender Rolls

Since 1873, Perkins Calender Rolls have been built to meet exactly the requirements of paper makers. The marked individuality of the finishing qualities of Perkins Calender Rolls has been developed during many years of close application to the problems of the paper industry. Perkins Calender Rolls are uniform, resilient, resistant. They stand heat better and wear longer. Take advantage of Perkins' long and close association with the paper industry.

B. F. PERKINS & SON, INC., HOLYOKE, MASS.

Engineers and Manufacturers

Cotton Rolls
Paper Rolls
Embossing Rolls
Chilled Iron Rolls
Granite Press Rolls
Web Supercalenders
Glassine Supercalenders
Friction Calenders
Embossing Calenders
Sheet Calenders
Platers
Mullen Paper Testers
Tensile Testers
Ventilating Fans
Rag Cutters
Stock Cutters
Paper Dampeners
Bleach Ejectors

000 in preference to the other alternatives offered that the project be turned over to someone else or dissolve the corporation and liquidate the assets.

The Northwestern Pulp and Paper Co. was incorporated late in the fall of 1926 and in the early spring of the following year, financial arrangements were well under way with its first mortgage 6½ per cent bonds to the amount of $1,000,000 having been disposed of.

Charles Randlett Flint, president of Flint & Company, N. Y., was named president of the company and other directors in the company included a number of prominent eastern business financiers.

T. Osmund, until recently president of the Tumwater Paper Mills at Tumwater, Wash. and for fourteen years previously secretary-treasurer of the Hawley Pulp and Paper Co. at Oregon City, on May first took a position with headquarters in Portland as assistant manager of the F. W. Leadbetter pulp and paper interests. Mr. Leadbetter is president of the Oregon Pulp and Paper Co. at Salem, The Columbia River Paper Mills at Vancouver, Wash., the Vancouver Kraft Company, Ltd. of Vancouver, Wash. and the California-Oregon Paper Mills at Los Angeles.

A report is current that A. V. Allen of Astoria, who was active in the promotion of the Northwestern Pulp and Paper Co. of Astoria, now under construction, is promoting a wood pulp mill for Bay City, on Tillamook Bay.

Spaulding Company Elects Directors

The following directors were recently elected at the annual stockholders meeting of the Spaulding Pulp and Paper Company at Newberg; C. K. Spaulding, who is president, J. H. Compto, H. M. Hawkins, H. C. Spaulding, Leland Johnson, L. B. Ferguson, E. Fred Emery, R. J. Moore, G. W. James, Nelson C. Bowles, Oscar P. Closset, Carl Gerlinger and E. C. Wright.

The stockholders, as a result of the report of the president which showed a deficit of more than $70,000 for 1928, attributed to the drop in the prices of unbleached pulp, recommended that directors take up the work of securing additional finances for the installation of a bleaching plant to cost approximately $140,000. In addition, they recommended, upon Spaulding's suggestion, that $250,000 be expended in doubling the capacity of the mill.

The Bingham Pump Co. of Portland, has begun the manufacture of a specially designed pump for pulp mills. One of the pumps was recently shipped to Porto Rico.

George Pussey, general superintendent of the Hawley Pulp and Paper Company mills at Oregon City, recently resigned and is retiring from active business.

CALIFORNIA

R. A. McDonald, with the Western Waxed Paper Co. of Oakland, until its merger with the Crown-Zellerbach Corp. and since that time with the latter organization, has been appointed sales director in the manufacturing units of the Crown-Zellerbach Co. which are making coarse paper.

MICHIGAN

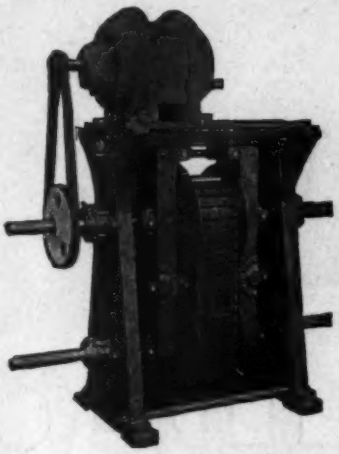
Sutherland Co. Shows Remarkable Growth

The Sutherland Paper Company, Kalamazoo, has just rounded out its twelfth year. The company was originally known as the Kalamazoo Carton Company, and was organized by Louis W. and Frederick W. Sutherland, who still direct the affairs of the company. The capital has increased from $10,000 to $3,000,000 paid in and $5,000,000 authorized.

A 3 per cent quarterly dividend payable May 1 on the 300,000 shares of common stock now outstanding was declared at a recent directors meeting.

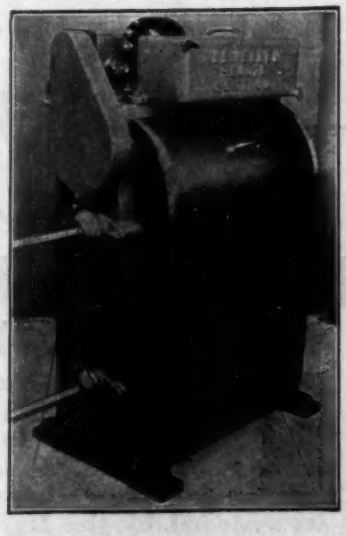
THE LEWELLEN VERTICAL VARIABLE SPEED TRANSMISSION

The LEWELLEN Vertical Variable Speed Transmission has proved its efficiency in a variety of installations where the standard type of transmission would not have been practical.



Here we show the LEWELLEN Vertical with driving motor mounted upon upper frame member, which may be cast with pads to fit any motor base. This permits a very compact short center chain drive.

LEWELLEN Variable Speed TRANSMISSION

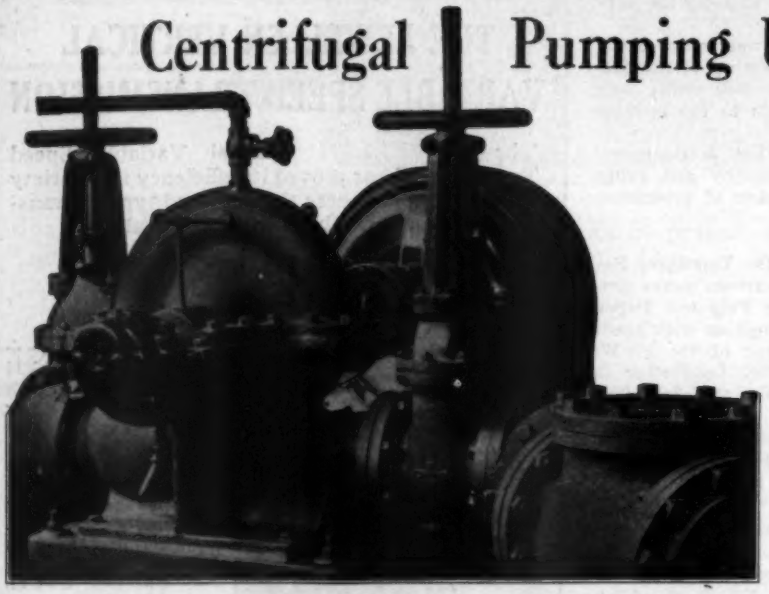


LEWELLEN Vertical Transmission equipped with electric remote control. It may be completely enclosed as shown, and if desired may be built with mechanical remote or automatic control. LEWELLEN Verticals are rapidly increasing in popularity.

Write us for any details you may desire regarding LEWELLEN Variable Speed Transmissions. Our knowledge and experience in solving variable speed control problems is at your command without any obligation.

Lewellen Manufacturing Co.
COLUMBUS, INDIANA

Centrifugal Pumping Units



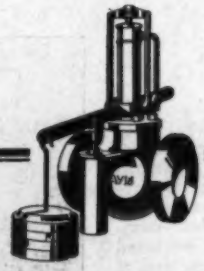
Which Are Suitable For Paper Mills

There are different kinds of pumps for different uses in Paper Mills. You don't have to buy an experimental pump if it has an Allis-Chalmers name-plate. The right pump for each particular service has been proven by many applications and can be furnished from a complete line.

Write for Bulletin 1632 H.

ALLIS-CHALMERS

MILWAUKEE, WIS. U. S. A.



PERFECTION IS NO TRIFLE—

But the careful consideration given to trifles with simplification of things mechanical tends towards perfection. Possibly this is the reason for the many years of popularity enjoyed by the Davis Pressure Regulator among men who seek satisfaction. First in America — first in the minds of discriminating users.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Avenue, Chicago, Illinois

DAVIS AUTOMATIC VALVE SPECIALTIES

PI 5—Gray

SYMBOLIC OF QUALITY

Fig. 460
Iron Body "Pilot" Gate Valve

TO specify Powell Valves is to specify service-proven valves especially adapted for use in the paper mills.

Throughout the paper industry the name Powell is symbolic of long, dependable service with minimum upkeep attention and expense.

THE WM. POWELL CO.
2525 Spring Grove Ave.
Cincinnati, Ohio

Change to—Standardize on

POWELL VALVES

K. V. P. Nineteen Years Old

Nineteen years ago, the first mill of the Kalamazoo Vegetable Parchment Company, then capitalized at $50,000, started operation. This year the mill and community celebrates the nineteenth anniversary of their founding.

In the fall of 1909 Jacob Kindleberger came to Kalamazoo from the Friend Paper Co., West Carrollton, Ohio, and succeeded in interesting two prominent local financiers, John J. Knight and John McLarty, in the formation of the parchment company.

Parchment community, for which the mill served as a nucleus, has also enjoyed a remarkable growth. In April, 1899 this tract of 28 acres was purchased by the Kalamazoo Beet Sugar Co. for $2,000. This concern failed and the location became the site of the present great industry which represents an investment of more than $8,000,000. There is a community house, church, school, several blocks of shops and stores, many homes and a forty-apartment building is in process of construction. There are also paved streets and playgrounds.

Four of the original members of the organization are still connected with the company. They are: Jacob Kindleberger, president; Earl Boldman, Henry Butler and Charles Conrad.

The Michigan Division of the American Pulp and Paper Mill Superintendents Association held its regular monthly meeting April 18 at the Post Tavern Hotel, Battle Creek. This was ladies' night for the club. In addition to dinner there were three talks. K. D. Smith, and Mr. Bird from the Union Steam Pump Company spoke on "The Application of Centrifugal Pumps for Paper Mills". E. Brazeau of the Appleton Machine Company, Appleton, Wis., spoke on "Jordans". There were about twenty-five present.

L. W. Sutherland, president of the Southerland Paper Co., has returned home from the Battle Creek Sanitarium and his condition is said to be much improved.

At a meeting of the Board of Directors of the Allied Paper Mills, Kalamazoo, April 23, W. A. Anderson was elected vice president and member of the Board. Mr. Anderson will retain his former duties as production manager for the company.

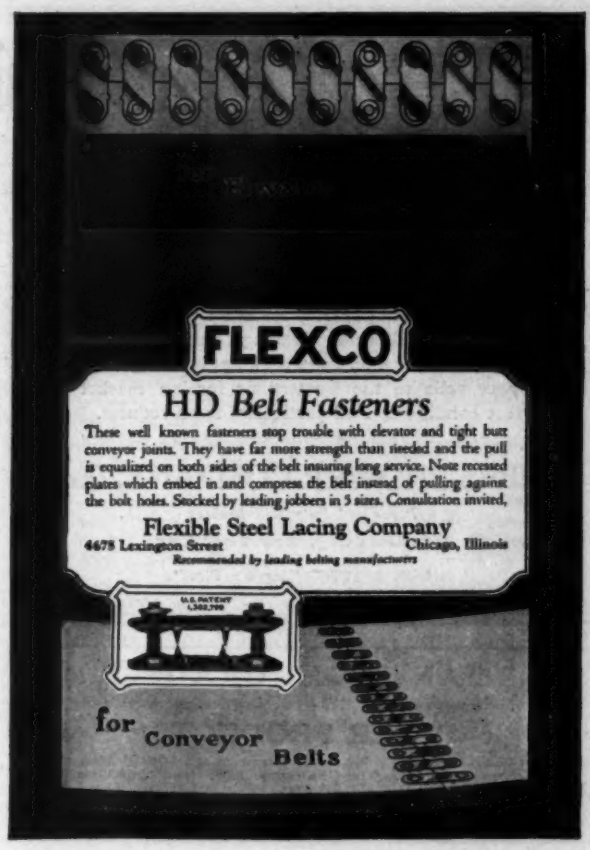
ENGLAND

Monthly Report on Trade Conditions

Reports from most sections of the trade indicate a good volume of business, and the cause for this lies probably in the improved outlook for the basic industries. It can also be partly attributed to the activities of the paper makers themselves in reorganization and in installing up-to-date equipment in their mills. Increased exports of British paper were recorded for the first two months of the year, the total being 794,078 hundredweight against 751,716 hundredweight for a corresponding period last year. Lower costs of production on the continent of Europe keep our competitors in the countries concerned at a continual advantage over domestic manufacturers, but more energetic selling methods are preventing the home makers from losing as much ground as might reasonably be expected.

In spite of the fact that Scandinavian mills can deliver newsprint to this country at some ten dollars per ton lower than the British make, our own newsprint mills are reported to be fully occupied, but there was a decline in exports in this particular section for the first two months of the year, the figure being 283,753 hundredweight against 318,083 hundredweight a year ago. The reduction is accounted for largely, however, by Britain's decreased exports of this class of paper to Australia. On the other hand, Canada's exports to that country have increased considerably, and now represent twenty-five per cent of their foreign sales.

Several leading newsprint firms have increased their out-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HD Belt Fasteners
These well known fasteners stop trouble with elevator and tight butt conveyor joints. They have far more strength than needed and the pull is equalized on both sides of the belt insuring long service. Note recessed plates which embed in and compress the belt instead of pulling against the bolt holes. Stocked by leading jobbers in 5 sizes. Consultation invited.
Flexible Steel Lacing Company
4678 Lexington Street Chicago, Illinois
Recommended by leading belting manufacturers
for Conveyor Belts

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Provide Efficient Mix
Save Power
Save Time
"Hill Tubular" Agitators operate on an entirely different principle—a vast improvement over other existing types. In actual daily service in the paper industry, these new "Hill Tubular" Agitators are demonstrating superior, uninterrupted efficiency on heavy clay fillers, paper coating, paper stock and ground wood. Every paper mill superintendent should know the details of this new development.
Write for explanatory literature.
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6417 Breakwater Ave. Cleveland, Ohio.
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AT LAST WE CAN OFFER THE JAGENBERG, DUSSELDORF, GERMANY, ROTARY ROLL WRAPPING MACHINE for shell packing for the protection of mill rolls. Damage during transit impossible; cheaper than crate packing; insuring delivery of your rolls to the Eastern or foreign market in perfect condition. Full particulars upon request.

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exceptionally attractive for introduction to the United States:—Straw papers; fine, cellulose-free Note papers; light, strong Typewriting Stock with and without Water mark; Art paper, white and colored; quality, non-cellulose Commercial, Offset, and Music Printing papers; Carton paper.

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Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

One 130" M. & W. four drum Winder

One 134" P. & J. Uniform Speed Reel

One 76" S. & W. Under cut cutter

Two 69" S. & W. Under cut cutters

For Sale By:

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175 Richdale Avenue, CAMBRIDGE, MASS.

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

MECHANICAL DESIGN DRAFTSMAN WANTED—For layout and design on paper and pulp mill machinery and equipment. Location central Wisconsin. Permanent for experienced and capable man. Give full particulars and salary in first letter. Address Box 154, The Paper Industry.

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

WANTED—Experienced and capable millright foreman to supervise installation of equipment in new southern mill and later act as master mechanic of plant. References, present and past salary in first letter. High class reliable man only wanted. Address Box 156, The Paper Industry.

Wanted—Paper Mill Superintendent; must be experienced, and competent to take complete charge of new mill making news. Give full particulars. Address Box 153, The Paper Industry.

SUPERINTENDENT OR PRODUCTION MANAGER—For Board Mill wants to make a change. Knows how to get results and increase production. Address Box 155, The Paper Industry.

CAPABLE EXECUTIVE—Wishes to connect with mill desiring to enter the decorating paper field. He is thoroughly familiar with the decorating and coloring of paper. Address Box 157, The Paper Industry.

put, and Bowaters have enlarged their mills to a capacity of 100,000 tons of newsprint per annum.

Fine paper makers are particularly busy at the present time, and the overseas trade in this section has improved considerably. The exports are up 4,858 cwt. for the first two months of this year in relation to the same period last year. Business is moderate in the wood-free section.

The position in the esparto section remains unsettled. Extremely high prices are demanded for early shipments, and both Northern African and Spanish varieties are scarce. One report states that British mills have made excessive demands which have resulted in a shortage, and suggests that a reduction in consumption in this country will bring down prices. It is pointed out in this connection, however, that labor and transport costs, particularly in Africa, are high, and that this is a factor which has played a considerable part in creating the present situation. The seriousness of the situation has, perhaps, been intensified by the fact that whereas some time ago the use of esparto paper was almost confined to a few Scottish mills, many English papermakers have now discovered that esparto pulp when mixed with sulphite wood has particularly useful qualities, with a result that the demand for esparto has been continually on the increase.

Algeria is the centre of the industry in North Africa, and a recent report states that the French Government, which controls Algeria, has been putting into force a scheme for improving the agricultural conditions of that country. Among these improvements has been the establishment of orange groves and vineyards which have attracted away the native labor from esparto production. It is considered that the cultivation and collecting of the grass will have to be organized on a more business-like method, and that higher wages will have to be paid, a development which will almost inevitably result in increased prices. Such an increase would affect such papers as imitation arts, medium-quality writings, and fine printings, also the body papers for the best quality of coated arts. It has been suggested that as bamboo pulp is the nearest approach to esparto, the situation will provide an opportunity for bringing the merits of bamboo paper before the notice of British papermakers.

There seems to be little doubt that the wrapping paper industry has benefited considerably by the imposition of a tariff tax. Lord Riddell stated recently in the House of Lords that since the wrapping paper duty had been in force imports had been considerably reduced and prices lowered. It is also claimed that the production of wrapping paper has increased by 38 per cent since 1925, the wages bill by 34 per cent, and the number of working people in this section of the industry by 20 per cent. As a result of this, new mills have been opened and more machinery installed.

In the same connection, the following extract from the annual report of the Papermakers' Association makes interesting reading: "The wrapping paper section of the industry is one of the half-dozen trades which has had the privilege of a safeguarding duty, and the effects have been beneficial to the manufacturers of this grade, while apparently doing no harm to the user of the commodity. Imports for the second complete year of the operation of the duty, though somewhat higher than those of the previous year, are still below the 1925 figures, and though the national exchequer has benefited to the extent of some £650,000, the average price of imported paper has shown a further decrease. Encouragement has been given by the existence of the duty to the erection of new large machines for the production of wrapping papers, and the tonic effect of the new market conditions is marked."

A steady increase has been shown in the demand for cardboard boxes, and although strawboards, millboards, and leatherboards are still imported in large quantities from Holland, British mills are supplying container boards of varying thicknesses and standards. The same applies to enamelled and coated boards which although imported in considerable quantities from the Continent are also being produced in British plants, many mills having installed the most up-to-date machinery in order to meet foreign competition.

The Times correspondent in India reports that develop-

COMPLETE EQUIPMENT

FOR

PULP AND PAPER MILL

The complete equipment of a 50 ton daily capacity Pulp and Paper Mill has just been released for sale. Equipment only slightly used, well cared for since shut down and all in perfect condition and ready to operate.

1—Downingtown 110" Finishing Machine, six cylinder with five sets baby presses and sixty-one 42" dryers. All complete including two 150 H. P. steam engines for drive, two 7 stack and one 9 stack two reels, one slitter calender rolls, Nash No. 4 vacuum pump, packer screens and stock pumps. All piping valves, traps and accessories installed and available.

1—Fourdrinier 60" Finishing Machine, four presses, twelve 36" dryers and twenty 28" dryers. All complete including motor and 150 H. P. steam engine for drive, one 9 roll calender, two reels, one slitter, one winder, one No. 4 Nash vacuum pump, packer screens and stock pump. Pipe and fitting installed.

1—Rogers Wet Machine with thirty 28" dryers. All complete including one 5 roll and one 7 roll calender, two reels, one slitter, one winder and 150 H. P. steam engine for drive. All pipe and fittings installed.

1—12,000 lb. capacity Breaker Beater with thickeners.

9—Downingtown Beaters, 1200 lb., 1500 lb., and 1800 lb. capacity.

3—No. 2 Miami Jordans.

4—Noble and Wood Monarch Jordans.

2—Claflin Refiners.

1—10" x 20" Triplex Stock Pump.

1—12" x 20" Duplex Stock Pump.

2—9" x 12" Triplex Stock Pumps.

2—8" x 12" Triplex Stock Pumps.

1—8" x 12" Duplex Stock Pump.

1—12" x 24" Simplex Stock Pump.

4—Welded Steel Digesters, 7′ x 21′.

1—Carthage 84" Chipper.

1—Williams Chip Crusher.

1—Shaker Screen for chips.

12—Caustic Tanks, 9′ x 12′.

1—10′ x 21′ Rotary Incinerator, with disc dryer, black liquor storage tanks, pumps, etc.

1—Triple Effect Schofield Evaporator, complete with pumps, condenser, etc.

9—150 H. P. Horizontal Return Tubular Boilers.

2—250 H. P. Horizontal Return Tubular Boilers.

1—300 K. W., 600 volt Turbine Generator.

2—150 K. W., 600 volt Turbine Generator.

1—1500 H. P. Corliss Engine.

2—300 H. P. Corliss Engines.

In addition to the above equipment there is a large stock of direct connected and belted centrifugal pumps, steam pumps for boiler feed and tank service, pipe, valves and fittings, steel tanks, drag conveyors, belt conveyors, electric motors, rubber and composition belting, mill supplies, yard cars, rail platform scales, machine shop equipment, lathes, drill presses, pipe machines, knife grinders, and a large stock of material and equipment for plant maintenance.

Catalog of Equipment will be sent on request. Inspection is invited and may be made at any time. Wire, phone or write for location and information.

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INDUSTRIAL POWER REPORTS
PAPER AND BOARD MILLS DESIGNS
MILL CONSTRUCTION CONSTRUCTION

ments in the industry and trade of that country, and the progress made in education, have resulted in a growing market for paper, pasteboard, and stationery, and that the value of this market to the British manufacturer has not been fully appreciated. The report states that foreign competition has increased and foreign firms have obtained a larger share of the trade, and the United States is mentioned among the countries whose share of the trade in paper and pasteboard has increased since the war. There is, according to the correspondent, a growing demand for pasteboard, millboard, and cardboard, and the Government of India is a very large purchaser of paper, pasteboard, and stationery, total imports on Government account being valued at nearly Rs. 50 lakhs in 1927-28.

Edward Lloyd, Ltd., of Sittingbourne, Kent, the biggest papermaking concern in the Empire, some six years ago acquired additional land for mill extensions in the neighboring village of Kemsley, which were put up to contain four of the largest and fastest newsprint making machines. The last of these machines is now in course of construction, and when this is completed it is anticipated that the combined plant of this company will constitute one of the largest and most up-to-date papermaking plants in the world.

Imports and Exports

Below are set out the values of the paper trade imports and exports in March, together with the increase or decreases as compared with the corresponding month of the two preceding years:

IMPORTS

	Mar., 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared with 1927.
Paper-making Materials ...	653,343	+16,602	—180,655
Paper and Cardboard.....	989,370	—254,506	—377,576
Quantities of the same articles imported:			
Wood pulp, tons.....	93,817	75,573	78,364
Paper, cwt. 1,408,193		1,306,471	908,301

EXPORTS

	Mar., 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared with 1927.
Paper-making Materials ...	111,386	—10,083	—4,945
Paper and Cardboard.....	656,435	—85,939	—157,647
Quantities of the same materials exported:			
Paper-making Materials, tons	12,894	16,827	13,690
Paper & cardboard, cwt...	402,276	336,979	324,708

Wear-resisting Hose for Paper Mills

The rugged tube construction of Quaker Hose gives it high capacity to stand the wearing pressures of constantly pounding steam and water.

Tough covers afford maximum resistance against abrasion and damage by dragging and crushing.

WATER—STEAM—CHEMICALS—FIRE PROTECTION

There is a Quaker Hose to serve you best where you need it most.

QUAKER CITY RUBBER CO.

Manufacturers of mechanical rubber goods

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Chemical Pulp Mill Engineers

WATERTOWN, N. Y.

Digester, Acid Proof and other Guaranteed Linings. Chemipulp Cooking and Recovery Process.

RHOADS TANNATE WATERSHED LEATHER BELTING

A MANAGER'S BELT RECORDS

A few months ago a southern manager was showing a Rhoads salesman some of his belt records. He called particular attention to a Tannate Belt that had pleased him very much on a difficult screen drive and which he considered had given unusual service.

Longer life and exceptionally efficient transmission on difficult drives is the usual experience with Rhoads Tannate Watershed Belting. The grip of Tannate is easily 25% stronger than that of best oak belting.

Others are finding that it pays to use Tannate Watershed Belts on account of lower up-keep and greater output. Let us send you one or more Tannate Belts for your exacting drives.

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Chicago—24 N. Clinton St. Cleveland—1224 W. Ninth St.
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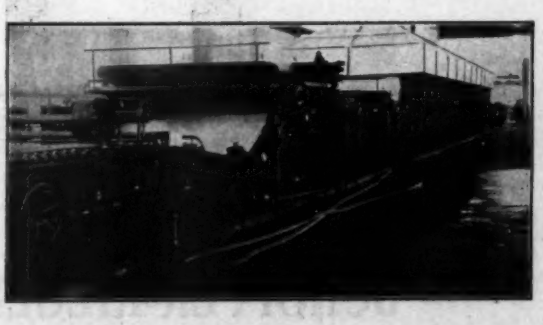

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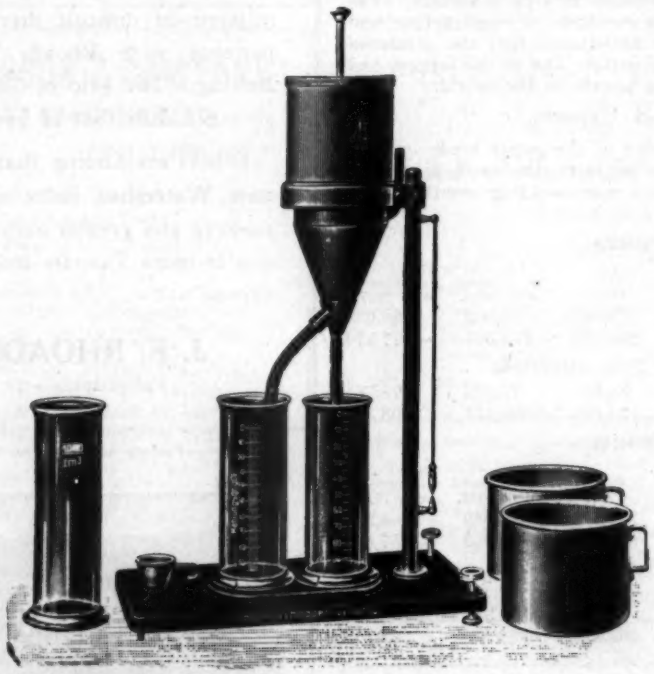

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Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Evaporating Sulphite Waste Liquors

ONE difficulty encountered in the evaporation of sulphite waste liquor is that the vapors that are developed during the process and which serve after compression for heating the liquors attack the metallic parts of the compressors and the metallic heating surfaces. To avoid this, the vapors are subjected to the action of absorbents before they are used for heating purposes. It has also been found advisable to subject these vapors first to the action of absorbers which have only a slight absorption for acids, and then to absorbents of gradually increasing absorbent properties. Thus milk of lime is first used and then sodium hydroxide solution. H. A. E. Nilsson, Storvik, Sweden, Swedish Patent No. 58,778.

Bleaching Sulphite Cellulose

NEW experiments were made in which the concentration of chloride of lime was increased up to 25 per cent. A new pH method was worked out in which specially prepared water-penetrable foils were dipped into the liquor being tested, which foils were colored in differen shades according to the pH value of the solution and the color was then compared ith a comparative color chart.

A semi-strong pulp was used in the investigations. Thirty-five grams were used in each test, the moisture content being six per cent. The bleaching was carried out at a temperature of 28 degrees C. until all of the chlorine was consumed, the mass being stirred every half hour. The quantity of chloride of lime used amounted to 18 per cent of the weight of the dry fibers and the bleach liquor contained one per cent of active chlorinee. After all of the chlorine was consumed, the excess bleach liquor was sucked out of the fibers, which were then suspended for ten minutes in tenth normal hydrochloric acid solution, thereafter washed free of acid and formed into sheets in a hand frame. The sheets were then dried in air to seven to eight per cent moisture content. The degree and alkalinity of the solution was varied by the addition of hydrochloric acid and sodium hydroxide.

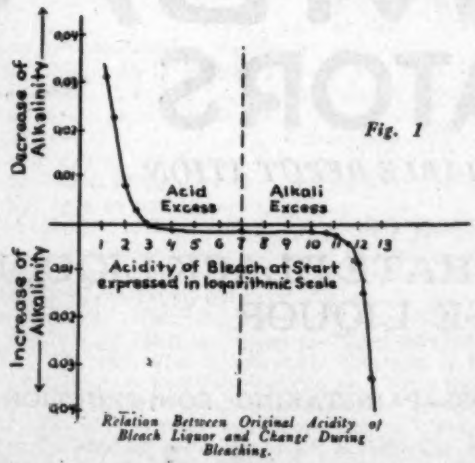


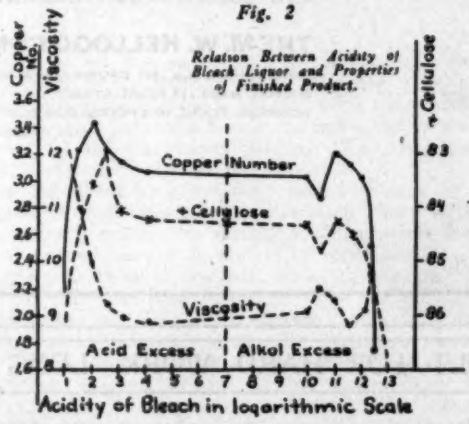
Fig. 1

Relation Between Original Acidity of Bleach Liquor and Change During Bleaching.

The results of the investigation showed that there was a strong consumption of hydrogen ions in acid and of hydroxyl ions in alkaline solution. These results are shown graphically in Fig. 1. It was also concluded that the bleaching action is due principally to acid-forming oxidation processes and not to chlorination. A thorough study was also made of the relation between the bleaching results and the hydrolytic splitting of the chloride of lime or rather of hypochlorous acid. It was established that the hypochlorite ion, to which the actual bleaching is due, decomposes in accordance with the following equation:—

$$C10^- = C1^- + 0.$$

Fig. 2



Analytical data regarding the final products obtained are given in graphical form in Fig. 2. The curves show the relation between these properties and the progress of the bleaching process. It should be remembered that in all instances the quantity of chloride of lime used was alike and only so large that over-bleaching could not take place.

The effect on the cellulose fiber was first small, in the case of the experiment wherein free chlorine predominated. Then it rose to a maximum, which corresponded to the maximum content of hypochlorous acid, and then it slowly decreased again as the concentration of hypochlorite ion increased. The fact that in the experiments made at the end of the investigation the alpha cellulose content and the viscosity again inceased with decreasing copper number is explained by the solution of the oxycellulose formed in the alkaline bath. R. Bergqvist, Svensk Papperstidning, volume XXJI, pages 361ff.

Sizing of Paper

THERE are three principal factors which control the sizing operation, namely, the properties of the rosin, rosin size and the rosin milk, the precipitation and fixing of the rosin that takes place in the beater, and the fritting or formation of film. Experimental observation has taught that the first and the third of these factors are the most important. The second has been studied most for the reason that experiments on precipitation and fixation of rosin can be most easily carried out in the laboratory.

The author believes that the way in which the rosin size is prepared is of much greater importance than the processes

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that take place in the beater. Different kinds of rosin possess different sizing qualities. Dark rosin sizes paper more effectively than lighter colored rosin. Furthermore, the saponification of the rosin and the working in of the free rosin into the saponified rosin when the free rosin content is high also takes place very differently in different rosins. The kind of rosin used must be known, for it often happens that much better results will be obtained when various types are mixed together. The nature of the cooking process is also important. Homogeneous saponification and emulsification are hard to attain. The danger of overheating must be emphasized for rosin is a bad conductor of heat. This danger must be overcome by vigorous agitation. The order in which the soda solution and the rosin are added, the temperature of the two components and the concentration are also important. The amount of water used must also be very carefully proportioned.

The action of the temperature within the drying cylinders on the papermaking machine on the sizing quality of the paper produced has been studied. It is claimed that a temperature of at least 90 to 90 degrees C. must be reached. The author subscribes to the opinion that the temperature, which the paper attains, depends upon the surface temperature of the cylinder, on the speed, with which the paper machine operates, and on the distance between two cylinders and the motion of the air in this interval. The surface temperature of the cylinder is much influenced by the condition of the surface. The manner in which the paper web fits around the cylinder and the condition of the felt, whether it is dry, wet, pervious or impervious to water, etc. are all important. The more rapid the machine, the lower the temperature attained by the paper web. Hence, as the rapidity of the machine increases, the temperature of the cylinder must be increased so that the paper web becomes sufficiently hot.

A series of tests were made on paper samples taken from the last press on a large papermaking machine. The various test samples were differently dried, partly by hanging them out in the air and partly by means of an electric iron. The was double that of a paper containing the average proporsizing quality of the paper was determined by the penetrability of ink according to the author's own method (see Der Papierfabrikant, 1927, pages 273ff). It was established that the sizing quality of the paper increased with the temperature. It was also established that the sizing quality tion of moisture, when the paper was thoroughly dried. Drying the paper at low temperatures has a very bad effect upon the sizing quality of the paper. Some interesting results obtained with a paper weighing 75 grams per square meter are given in the following tabulation.

	Top	Wire side
Air dried	27 seconds	.....
Dried on the papermaking machine	84 seconds	.....
Died at 100 degrees C. by means of an iron	142 seconds	196 seconds
Dried by means of an iron at 140-200 degrees C.	722 seconds	932 seconds
Dried half way at 180 degrees C., and finished at 90-110 degrees C.	183 seconds	259 seconds
Dried half way at 190 degrees C., and finished at 125 degrees C.	289 seconds	306 seconds

The author considers sizing of paper as a bridging over of the pores between the individual fibers by means of a film of rosin. The more porous the paper, the greater the amount of size required. When the paper is filled with fifteen to thirty per cent of filler, the sizing operation becomes very difficult. The rosin film is extremely thin and it is not really a film in the ordinary sense of the word but a structure consisting of extremely small rosin particles. Further details of this very valuable and interesting article are obtained in the original published by Dr. H. Schwalbe in Der Papierfabrikant, volume 26, 738-40.

A Simple Way of Getting Rid of Condensate

DIFFICULTIES are always encountered in getting rid of condensate when steam is used. One is generally satisfied that the condensate is removed without taking into consideration the loss of steam involved. Too little attention is paid to the loss of steam from leaking connections and the like. It is useless to spend money in buying expensive machines and apparatus which possess a small steam consumption, if steam is lost in this manner. There should be ways and means of removing the condensate without loss of steam and without constant repair to existing apparatus.

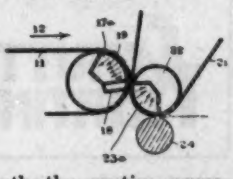
The author has established that considerable values are involved in the removal of condensate from the steam dry-

ing cylinders on the papermaking machine. If the condensate level is too high in these cylinders, then a large part of the heating surface is covered with water and hence is inactive. This naturally delays the drying process and the production of the machine is reduced. The same condition applies to calender rolls and the like.

These difficulties have generally been overcome by means of expensive installations of complicated character, which are constantly subject to operating difficulties. The condensate remover should be simple in construction. Floats and expansion devices are not advantageous due to the constant repair that is necessary.

A condensate pot, which is to operate continuously without interruptions and loss of steam, must possess no moving parts. Steam can be almost positively prevented from passing through the condensate pot by means of a simple labyrinth, while the condensate will easily flow through it. Such an apparatus is shown in the accompanying illustration. It possesses only a simple labyrinth and has no moving parts. Its operation is indicated in the illustration and needs no explanation. H. Richter, Zellstoff und Papier, 1929, page 164.

Improvement in Papermaking Machine



THE fourdrinier wire is shown at (11) in the accompanying illustration, moving in the direction of the arrow. At the discharge end of the wire there is a suction roll (19) and also a suction press (22) which is provided with an endless felt (21). A press roll (24) is located beneath the suction press. R. Collins, Three Rivers, Ontario, Canada, United States Patent No. 1,701,226.

Quality of Pine Wood

TESTS were made on Norway pine. The rapidity of the growth of the tree is shown for two different woods. Various samples were taken to determine the relation between the entire yearly ring width and the fall growth, the length of fibers and the density of the fibers, which gives the quantity of fiber per millimeter of annual growth ring. The methods used for examining the wood and determining these factors are described and the results are given in tabulated form, as well as in diagrammatic form.

The results showed that the wood at the place where the cut is made is of inferior quality from the wood taken from the center of the log. The amount of fall growth in the wood is consequently small, the fibers are short and the fiber density slight. The annual growth rings are compara-

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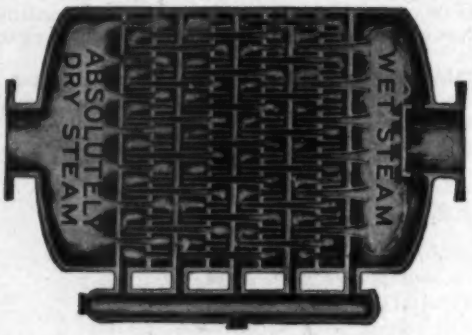

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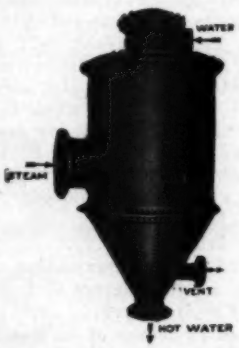

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tively wide with a comparatively small amount of fall growth, but the fiber density great due to small and thin-walled fibers. The wood from the top of the tree is of inferior quality as compared with the wood from lower parts of the trunk. The annual growth rings are wider, the fall relatively smaller and the fiber length shorter.

Narrower annual growth rings contain, all other conditions remaining constant, a greater proportion of fall growth wood and longer fibers than wide annual growth rings. This statement holds goods only in a certain degree. If the growth rings are narrower than one millimeter, then deviations from this rule may be found in the outermost part of the trunk.

Growth rings of approximately seven mm. possess only half as much fall wood as growth rings of 1.3 mm., and the fibers in the first are approximately twenty per cent shorter. There is no general rule between the annual growth rings and the density of the fiber, and there is nothing to the fact that wide growth rings possess larger cells—lower fiber density—on the other hand, wide growth rings appear to possess in part large fiber density. Elias Morck, Papir Journalen, volume 16, numbers 4 to 10.

Beating Pulp in the Beater

THE manner in which pulp is beaten in the ordinary type of beater is shown in Fig. 1. The beater knives act in a system of layers. Hence, a more or less complete filling of

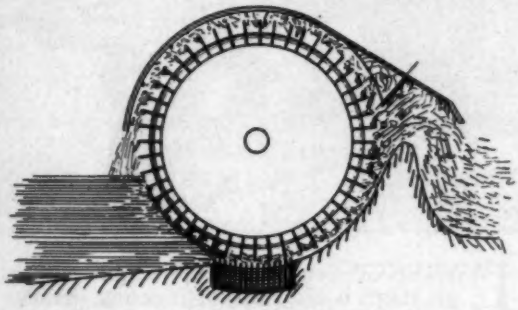


Figure 1

the spaces between the beater knives takes place dependent on the height of stock in front of the roll, the distribution of the knives around the circumference of the beater roll, the rapidity of the flow of stock and water to the roll, as well as the duration of contact of the beater knives with the stock. The stock reaches the bedplate in this manner and is subjected to a beating action between the knives of the beater roll and the bedplate. The tearing and other effects that are produced on the fibers is supposed to be the result of the knife work according to the scissor principle.

The author proceeds to describe at this point the manner in which the results of this beating action can be calculated. He also points out the importance of the speed of the beater roll, which means the speed at which the knives on the roll move by the knives on the bedplate.

New experiments have however shown that the beater knives during the movement of the roll through the mass

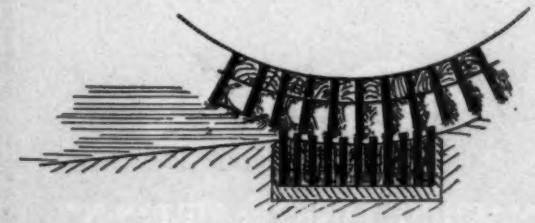


Figure 2

of pulp in front of the roll carry along with them not only a portion of the pulp in the slots between the beater knives but also a certain amount on the edges of the knives. This can be seen from Fig. 2. The amount of pulp which adheres to the edges of the beater knives in this manner depends on the nature of the fibers, the density of the stock in the beater trough and the nature of the cross-sectional form of the beater knives.

It is pointed out that the following disadvantages are present in the beaters that are commonly used to-day. First, a large amount of material is carried along by the beater roll due to the great speed of the latter but is not actually

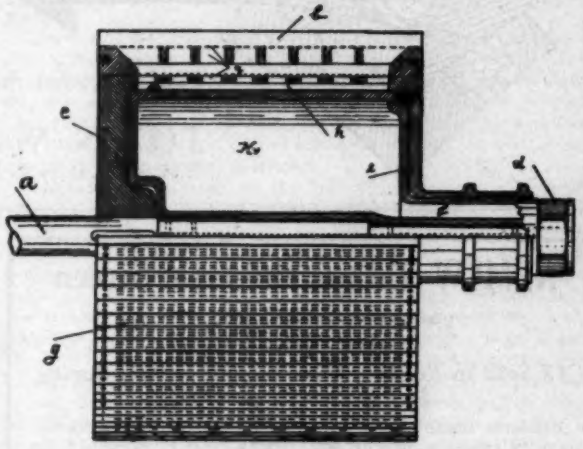


Figure 3

subjected to beater action, with the result that a large amount of power is needlessly consumed. Second, the knives that are actually able to effect beating of the stock are limited to those that make contact with the forward part of the bedplate. Third, the slots are not properly emptied of their pulp content and all sorts of eddy currents and the like are

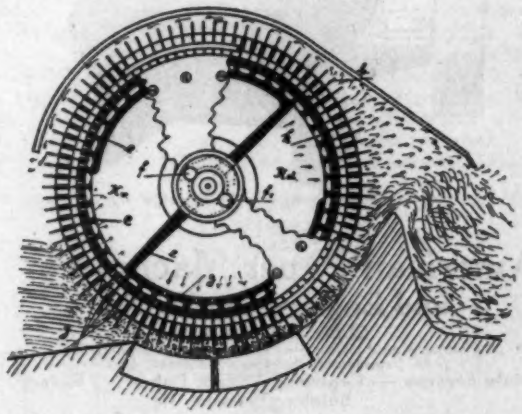
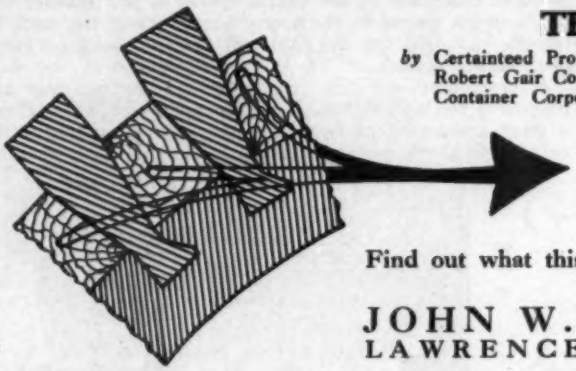


Figure 4

created which result in loss of energy. Fourth, the efficiency of conversion of energy into useful beating action is very poor.

A new type of beater is shown in Figures 3 and 4, which merits the attention of the paper man. The construction of the beater roll is unique. It consists of a movable portion (c) which is fixed on the driving shaft (a), as well as a stationary portion (e) which is held tight by means of the nut (d). The stationary portion (e) is divided into two chambers (Kv) and (Kd), which are hermetically sealed from interconnection with one another as well as against the rotating knife body (c). Each of these chambers is connected with the outside to a vacuum or compressed air pipe by means of the channels (f) and (f_1) Hence an atmospheric overpressure is produced in the chamber (Kv) and a lower than atmospheric pressure in the chamber (Kd). The stationary roll or the pressure chambers are constructed in such a manner that the vacuum chamber (Kv) faces the stock en-



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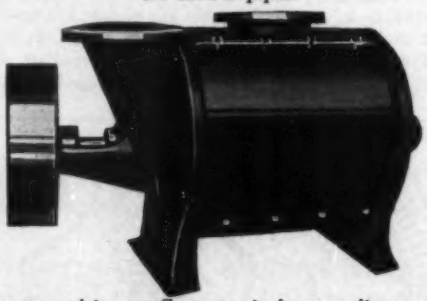

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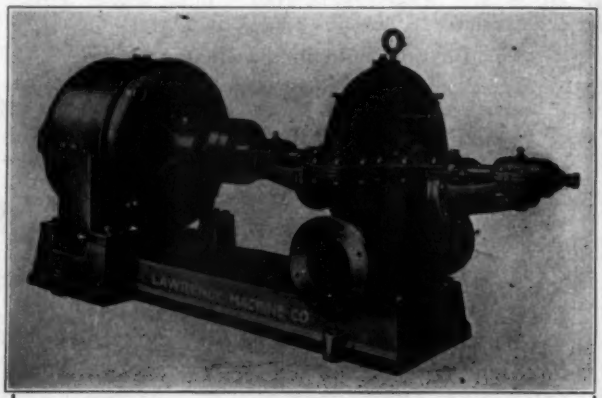

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trance side and the pressure chamber (Kd) the stock delivery side. As the rotary knife carrying part (c) is rotated, the slots reach the region in which the vacuum chamber operates, and the stock is sucked in through the slots and openings (g). The removal of the stock from the roll reduces to a considerable degree the energy required for accelerating the roll with mass of adhering stock on it. The principal advantage of removing the stock from the slots on the beater roll is to produce a condition wherein the correct amount of stock remains adhering to the edges of the knives so that beating is carried out under the best possible conditions. As the knives reach the bedplate, they come out of the region wherein the vacuum chamber is active and enter the region in which the pressure chamber (Kd) acts. The walls of the chamber are formed of slots (g) at this point. W. Gruetzky, Der Papierfabrikant, year 1929, pages 149-154.

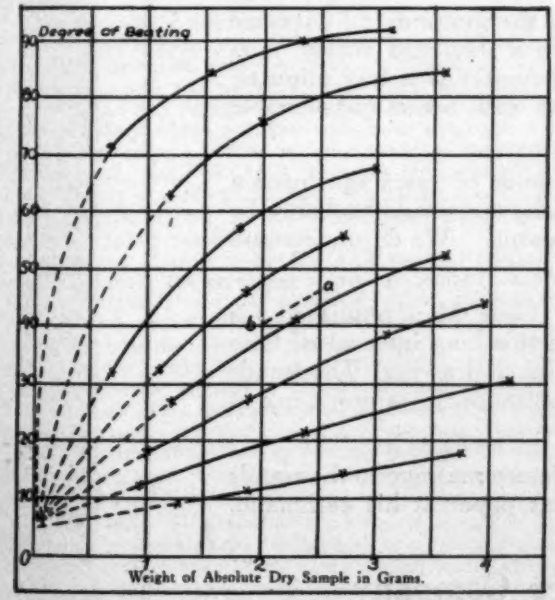
Beater Roll

LONGITUDINAL grooves (7) are formed in the grinding bar support, the walls of which are parallel longitudinally and vertically of the roll. Grinding bars (13) are located in the grooves and are provided with openings extending through the grooves, shown at (14). Locking members (18) are provided with projections extending through the openings and engaging the surfaces. The locking members are held in position.

F. G. Feeley, Pittsfield, Mass., assignor, E. D. Jones & Sons Co., Pittsfield, Mass. United States Patent No. 1,702,633.

Correction Curves for Schopper Rigler Beating Determining Apparatus

THE results of testing for degree of beating are dependent on the quantity of stock used. The use of sample takers which always hold the same amount of pulp is disadvantageous and varies because the density of the stock in the beater is not always the same. Certain correction factors have been determined and are shown in the accompanying chart.



Influence of Amount of Stock on Degree of Beating—Schopper-Riegler.

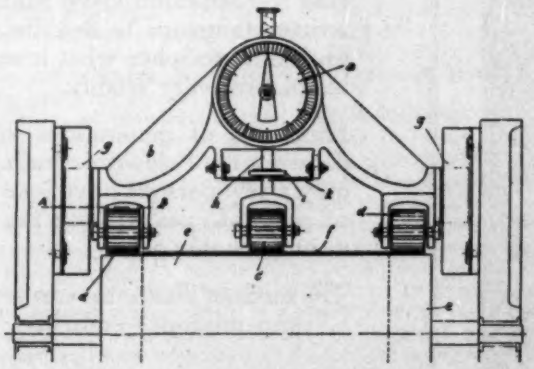
The degree of beating is plotted as ordinate in this chart and the weight of the pulp as abscissae. Different stocks, such as rag, mixtures of rag and chemical pulp, bleached and unbleached sulphite pulp and soda pulp, of different degrees of beating were used in building the curves. A number of tests were made on each degree of beating with different quantities of pulp. The absolute dry weight of the pulp mass was determined and the results were plotted in a system of co-ordinates. Curves were then drawn through these points, and these curves all have a common origin, which represents the case where the apparatus contains pure water alone. The author carried out his experiments all at the same temperature, which varied between 18 to 20 degrees C.

The curve diagram shows that as the beating is continued, the curves become more and more bent. It appears from this study that the nature of the pulp has little if any influence on this relationship. The conclusion is therefore reached that these curves can be used for all kinds of pulp and that the results obtained with the aid of these curves will be accurate for all practical purposes.

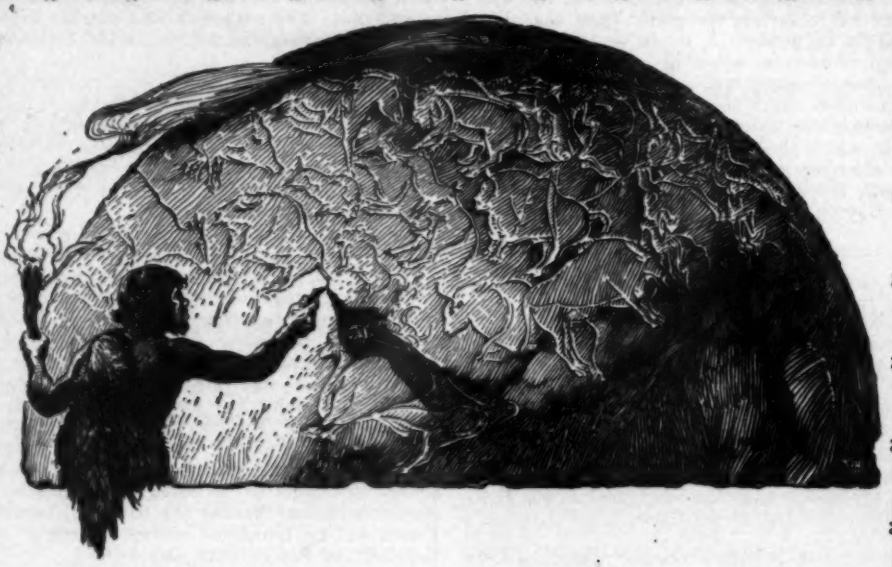
The curves are used in the following manner. It is assumed that the degree of beating read off from the measuring cylinder is 46, the weight of the absolutely dry mass of pulp 2.5 grams instead of two grams which is standard. In order to determine the actual degree of beating, it is necessary to use the curve diagram by running upward from the point 2.5 grams on the X scale until the point 46 on the ordinate scale is met. This is at a. A curve is then drawn through this point (a) and the origin, this curve running like the others. The correct degree of beating is then obtained with the aid of this curve by running a line from the 2.0 gram point up to intersect it. It is also possible to draw a line from (a) which approximates in form the curve closest to it and then at the point (b) corresponding to 2.0 grams will be found the correct degree of beating or 40.5. Zellstoff und Papier, 1929, pages 154-5.

Thickness Measuring Device for Paper and Board Webs

THIS apparatus works by means of rollers which make contact with the paper web and which are connected with a pointer. The apparatus is claimed to indicate the thickness accurately and clearly. As may be seen from the accompanying illustration, the carrier (b), which contains the indicating device (a), rests on the cardboard roller (e) by means of two rollers (d). The paper or the cardboard web (f) makes contact with the roller (c), which actuates the indicating device (a). The carrier also possesses lateral guiding pieces which run in the vertical guides (g).



When the roller (e) lifts or lowers, then the rollers (d) also lift and lower as well as the contact roller (c). The lifting and the lowering exerts no influence on the indicating device (a). On the other hand, if the thickness of the paper web (f) changes, then the contact roller (c) is raised above the rollers (d) with the result that the indicator is actuated. The differences in the thickness of the paper web are therefore directly indicated by the indicator and are not affected by the shaking of the machine. The manner in which the motion of the contact roller (c) is carried over to the indicating device (a) is clearly indicated in the accompanying illustration. L. Schopper, German Patent No. 452,881.



The Artist Had No Paper

CONFUCIUS is credited with the sentiment: "Give me one picture, and I will save a thousand words." A thousand words on the typewriter is a few minutes' work. In Chinese characters they call for a considerable physical effort.

Had the Altamira Cave Man, thousands of years ago, used a written language to describe a buffalo, we would probably be unable to decipher what it was all about. We do understand his picture very readily.

Hundreds of generations ago the Cave Man published his picture of a Paleolithic buffalo. In this long interval of time only a few persons have seen the original drawing. Thousands of pairs of eyes will see the representation in printer's ink at the top of this page.

The modern illustrator can get his picture message to thousands —even millions—quickly. He has paper at his command.

Hammermill Paper Company

Erie, Pennsylvania

New York, May 1, 1929

IT IS agreed in most corners of the trade that business in paper is on a fairly large scale; that demand is developing in a very steady manner and in comparatively big volume, and that the market is affording just about all that could reasonably be expected at this period of the year and under prevailing trade circumstances. The current demand for paper is very healthy; in other words, there is little buying ahead—most consumers, converters and jobbers are aiming to cover direct requirements, and are permitting the future to take care of itself insofar as supplies are concerned. Nevertheless, the call from most buying quarters is brisk, and has shown some expansion in certain kinds of paper recently. Most assuredly, business in paper has not diminished since the first of the year; instead there has been a gradual improvement in the market in some directions, and in an aggregate sense, there is little question that a better movement of supplies from mills into consuming channels is now in progress than was the case several months ago.

Buyers appear to have more confidence in the stability of prices of paper as now prevailing, and well they might because it is plainly evident that some classes of paper are inclining upward. These include certain grades which for quite a lengthy period were almost constantly on the downtrend. Manufacturers are firmer in their attitude regarding prices, and all through the industry there seems to be a disposition manifested to maintain market levels, and to endeavor to secure at least slightly higher prices on some papers.

Groups of mills making some kinds of paper are in cases operating at a better rate of capacity than in months. This does not mean that manufacturers are rushed, or that any deluge of orders has descended upon them, but it is a fact, according to very reliable reports, that some mills are busier than in some while and that they not only are making more paper but are finding an outlet for all of their product. For example, there has been noticeable improvement in the consumption of newsprint; also, fine paper manufacturers are marketing more of their product, as are wrapping, fancy and other paper manufacturers.

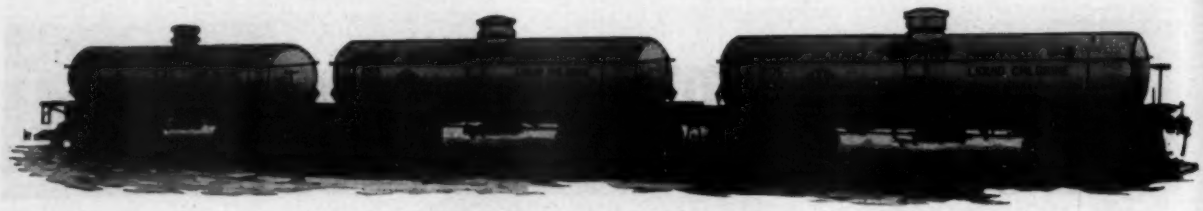
The output of paper in the United States in February was smaller than in the preceding month, as would be expected because February is a short working month, but such figures as have been issued since the February production report show a marked increase in paper manufacturing activity following the slight recession in February. Mills of the country produced a total of 542,076 net tons of paper and board of all kinds during February, according to identical mills reporting to the American Paper and Pulp Association, compared with 598,591 tons in January last, and 523,018 tons in December, 1928. The February output compared also with 529,789 tons produced in the similar month last year, a gain of 2.3 per cent. All grades except hanging, wrapping, newsprint and book registered an increase in monthly production over last year. Paper board production showed a rise of 9 per cent over February, 1928, while felts and building increased 16 per cent, tissue one per cent, writing 3 per cent, and bag paper 23 per cent. Shipments from mills during February aggregated 550,456 net tons, against 596,800 tons in the preceding month, while stocks on hand at mills at the end of February amounted to 270,907 tons, showing a decline from the 280,452 tons held a month previously.

Newsprint production scored a sharp gain in March as contrasted with the preceding month. According to the News Print Service Bureau, mills in the United States produced a total of 114,586 tons of newsprint in March and shipped out 120,003 tons, against 103,644 tons produced and 108,375 tons shipped in February, while Canadian mills made 218,147 tons and shipped out 219,739 tons in March, compared with 187,200 tons made and 186,395 tons shipped in the preceding month. During March, 19,985 tons of newsprint were manufactured in Newfoundland and 1,709 tons in Mexico, so that the total North American production for the month reached 354,427 tons. The Canadian mills produced 46,712 tons more in the first quarter of this year than in the same time last year, which was an increase of 8 per cent. The United States mills made 11,457 tons, or 3 per cent, less than in the first three months of 1928. Production in Newfoundland was 4,855 tons, or 9 per cent, greater, and in Mexico 959 tons more, so that the total increase for North America was 41,069 tons, or 4 per cent above the output in the first three months a year ago. During March the Canadian mills operated at 83.8 per cent of rated capacity, the United States newsprint mills at 78.6 per cent, and the Newfoundland mills at 97.5 per cent. Stocks of newsprint at Canadian mills totaled 24,045 tons at the end of March, and at United States mills 30,534 tons, making a combined total of 54,579 tons, which was equivalent to 3.5 days' average production.

Following a fairly marked decline during February as compared with the January output, production of paper board rose to a high level in March. In fact, more board was produced in the United States in March than in any month in over a year, and exceeded the output of any month during 1928. According to figures compiled by the U. S. Department of Commerce in Washington, mills of the country made a total of 254,218 tons of board in March, against 226,934 tons in February, 246,890 tons in January, and 227,344 tons in February, 1928. Board mills produced at 88.3 per cent of their capacity during March, contrasted with 81.2 per cent in the preceding month; received new orders for a total of 264,995 tons of board in March, against 226,495 tons in February, and had unfilled orders for 96,209 tons at the end of March, compared with 87,726 tons a month previously. Shipments of board from mills during March aggregated 256,704 tons, against 226,106 tons in February, and stocks of board at mills totaled 54,982 tons at the end of March, contrasted with 57,398 tons at the end of the preceding month.

Prices of newsprint appear well stabilized on the lower levels announced some time ago, and there are numerous indications that the consumption of print paper is on the rise, with a resultant larger movement of supplies from mills into consuming centers. Predictions are being made that United States consumption of newsprint will record an appreciable gain in 1929 over last year, and some are optimistic enough to believe that consumption this year will come close to equalizing the increase in production of the last several years. There is a steady demand for wrapping papers, and most kraft mills are well engaged and are reported well fixed with orders. Book paper is moving steadily and in fairly heavy tonnage; one of the pleasing features of the market is the regularity that marks demand, which means that consumers are absorbing supplies consistently as their requirements arise. Tissue paper is in moderately good call, as are glassine, parchment, bag papers and fancy papers for paper box, envelope and other such purposes.

Fine papers are moving freely and in larger volume. This is particularly true as regards high-grade bonds and ledgers of rag content, there having been a marked return of demand for such papers in some consuming quarters. Box boards are in a livelier market position, with demand giving signs of further expansion, and prices are firm and tending upward.



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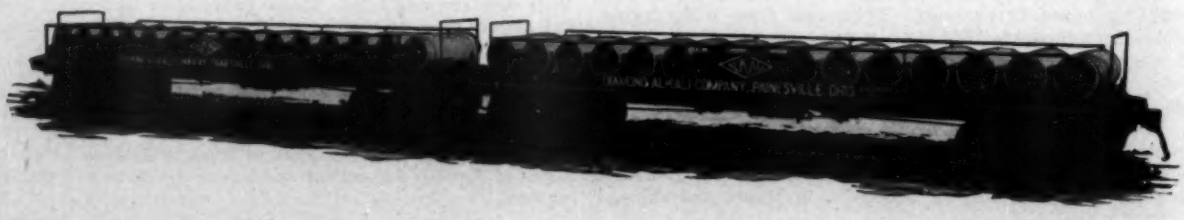


Papermaking Rags

There is a better demand for papermaking rags, with the improvement embracing practically all grades consumed in the paper mill. The lowest class of rags, or roofing stock, which have been moving well for some time, continue in excellent call, and demand for the higher qualities has increased to a degree where a much broader consuming outlet now exists for such rags and where in some instances prices have been strengthened to some extent. Some dealers assert that the market, from a general standpoint, is livelier at present than has been witnessed in a long time—certainly in more than several years—and the pleasing feature of the situation is that the improvement gives every indication of being founded on a healthy increase in consumption of rags by paper manufacturers. In other words, there has been a marked gain in demand for fine papers of rag content, and with mills procuring more business in such paper, they are of course using larger quantities of rags and consequently are more actively in the market as buyers of many grades of rags.

Another factor which is helping to make for a stronger market situation is the relatively firm position of papermaking rags abroad. Apparently, paper mills in the various European countries are utilizing more rags, or else the available supply in most sources abroad is not measuring up to normal, as offerings by shippers to importers in the United States are nowhere near as numerous nor voluminous as has been the case, and higher prices are demanded. Consequently, fewer rags are being imported, which necessitates consumers here looking more to domestic supplies to fill their wants, thus creating a brisker demand for rags produced in this country.

New cuttings of nearly all grades are characterized by more or less demand from paper mills, and prices in a large majority of cases either are steady or are tending upward. Some descriptions of cutting have scored a further rise. For example, washables are now quoted by dealers at 5.50 cents a pound f. o. b. shipping points, and sales at this price level have been recorded, while fancy shirt cuttings are priced in most quarters at 6.50 cents or higher, and light silesias at 8.50 cents. Not a great deal of demand is reported for No. 1 new white shirt cuttings but these rags are held for 10.50 to 11 cents a pound at dealers' points, and in some instances where especially desirable packing is concerned above these figures is asked. New blue overall and denim cuttings are firm at 7.75 to 8 cents a pound at shipping points, unbleached muslins at 11 cents or more, O. D. khaki cuttings at 5.75 to 6 cents and light flannelettes at 8.50 to 8.75 cents.

Old white cottons have stiffened in price to where most quotations from dealers range around 6 cents a pound at shipping points for No. 1 repacked whites, and 2.75 to 3 cents for No. 2 repacked whites. Repacked old thirds and blues are selling at 2.50 to 2.75 cents a pound at dealers' points, and rough blues at 2 cents. Dealers are particularly firm on blues because it is said that few accumulations of these rags are in the market, and that incoming supplies are subnormal. Twos and blues of repacked quality are reported to have brought as much as 3.25 cents a pound f. o. b. shipping points in sales to paper mills.

Roofing rags are moving freely and at steady prices. Less than usual quantities of these rags are being imported owing to prices abroad being relatively higher than in the United States, and there is consequently a ready sale for all of the domestic roofing stock reaching the market. Dealers report mills granting 2 cents a pound or very close to this price f. o. b. shipping points for No. 1 domestic roofing or cloth strippings, and 1.50 cents and higher for No. 2 domestic packing. Foreign dark cottons are bringing 1.60 and 1.65 cents a pound ex dock American Atlantic ports for forward shipments from abroad. The better grades of imported rags are finding a ready sale also, and buyers have displayed willingness to pay at least slightly higher rates for the material wanted.

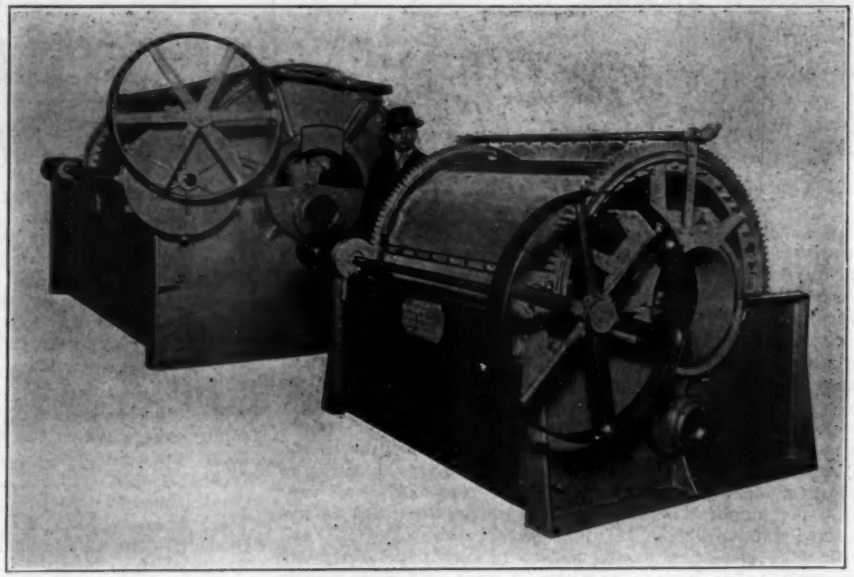
Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.50–11.00
White shirt cuttings, No. 2	6.50– 7.50
Fancy shirt cuttings	6.50– 6.75
Washables, No. 1	5.25– 5.50
Unbleached muslins	11.00–11.25
White lawns	9.00– 9.50
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.50– 8.75
Canton flannels, bleached	9.75–10.00
Canton flannels, unbleached	8.75– 9.00
Shoe cuttings, bleached	7.50– 8.00
Shoe cuttings, unbleached	6.00– 6.50
Light silesias	8.25– 8.50
O. D. khaki cuttings	5.75– 6.00
Mixed khaki cuttings	4.75– 5.00
Corduroy cuttings	3.25– 3.50
Cotonade cuttings	3.25– 3.50
Linens, No. 1, white foreign	14.00–15.00
Light prints, foreign	3.00– 3.25
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.50– 5.75
Thirds and blues, rough	1.90– 2.10
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.75– 5.00
White cotton batting	4.50– 4.75
Roofing, No. 1 (cloth strippings)	1.90– 2.00
Roofing, No. 2	1.50– 1.55
Linsey garments, foreign	1.85– 1.90
Dark colored cottons, foreign	1.60– 1.65
Blue linens, foreign	3.75– 4.00
Gray linens, foreign	4.00– 4.50
White linens, foreign	7.50– 8.00
Light prints, extra foreign	2.00– 2.25

Rope and Bagging

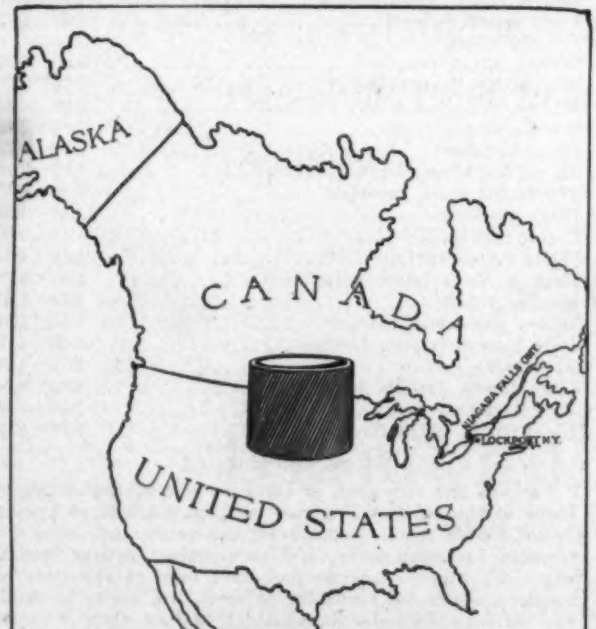
Perhaps the strongest, or certainly one of the strongest, items in the papermaking raw material markets at present is old manila rope. Demand for this article has been pronounced for some while, and papermakers appear just as eager for supplies now as they have been at any time recently, and are not hesitating to meet firm prices to obtain the old rope desired. Supplies are limited, since it is declared that there is not the production of old rope that there formerly was, and it would seem that the only reason consumers do not offer higher prices is that they have reached the conclusion that to do so would not bring out any additional old rope. Domestic No. 1 old manila has sold at 5 cents and higher per pound f. o. b. dealers' shipping points; in fact, it is doubted whether purchases can be made at less than 5 cents, and dealers as a rule are endeavoring only to keep their regular customers fixed with supplies at this price level, and frequently quote higher.

Save-alls
Filters
(Wire cloth and Sponge)
Shredders
Granite Bed Plates
Rod Mills
(Block lining)
Kelly Shower Pipes
Cylinder Valves
Sheet Cutters
(For Rogers)



LOW INLET — CENTER INLET

GREEN BAY FOUNDRY & MACHINE WORKS
Green Bay, Wis., U. S. A.



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It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

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We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.
Appleton, Wisconsin

Foreign old manila rope is bringing 4.50 cents and more per pound ex dock New York and other American Atlantic ports. Strings are in fair demand, and quotably steady at about 90 cents per hundred pounds for ordinary packing, with better quality held at a cent per pound and higher.

Paper mills are absorbing old bagging in routine fashion and at about stationary prices. They are granting 1.60 and 1.65 cents a pound at shipping points for No. 1 scrap bagging, and 1.25 to 1.30 cents for roofing bagging. Scrap wool tares are selling well to papermakers, but at unchanged prices.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60–1.70
Gunny, No. 1 foreign	1.50–1.60
Scrap bagging, No. 1	1.60–1.70
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.50–4.75
Manila rope, No. 1 domestic	5.00–5.25
Sisal strings	1.50–1.75
Mixed strings	.90–1.10

Old Paper

Market prices of the low grades of old paper have sunk to fairly cheap levels, whereas the higher qualities appear to be holding their own relatively well. In other words, the element of demand and supply is governing prices to a little more than a normal degree, and since there is a limited call for the low or board-making grades, prices of these have slid off at a fairly rapid rate, while other descriptions in more demand rule steady in value. The situation in low grades seemingly is the outcome of the period of brisk buying by board manufacturers several months ago, when presumably they stocked up in a manner enabling them to keep out of sight as buyers for a time, and, as ordinarily is the case in waste paper, when demand subsided, prices quickly reacted downward.

Probably the most generally wanted and firmest grade of stock in the market is soft white shavings. Mills are purchasing soft shavings freely and meeting steady prices. A good packing of soft white is fetching 2.60 cents a pound f. o. b. shipping points, while extra shavings of one-cut quality have been reported sold up to 2.85 cents at dealers' points of shipment. Hard white shavings are quoted on a scale of 2.65 to 3.10 cents a pound, depending on the packing—the high figure being granted for choice stock containing a good percentage of rag fiber. Old books and magazines are selling at 1.45 to 1.50 cents a pound at dealers' points, ledger stock at 1.40 to 1.75 cents, according to grade, and old No. 1 kraft paper at around 1.80 cents. Prices of folded news have worked down to where sales have been reported f. o. b. New York at as low as 55 cents per hundred pounds, and No. 1 mixed paper is selling in the East at 45 cents at shipping points. Slightly higher prices than these prevail in the Middle West on the low grades.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.65–3.10
Hard white shavings, No. 2	2.50–2.75
Soft white shavings	2.40–2.85
Colored shavings	1.00–1.25
Heavy book, No. 1	1.40–1.50
Crumpled book, No. 1	1.10–1.20
Ledger stock	1.40–1.75
Kraft, No. 1	1.70–1.85
New kraft cuttings	2.40–2.60
Manilas, No. 1	.75– .90
Folded news	.55– .65
Sulphite mill wrappings	.75– .85
Old corrugated boxes	.60– .65
New corrugated box cuttings	.75– .85
Mixed paper, No. 1	.45– .55
Common paper	.35– .45

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Bogalusa Paper Company, Bogalusa, La.
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The illustration shown below is a Battery of Acid Tanks at the St. Regis Co. Mill at Deferiet, N. Y.

The HAUSER-STANDER TANK CO.
Cincinnati, Ohio

Pulpwood

A fair demand is reported for pulpwood; consumers as a general thing absorbing supplies freely, though market activity is not of sufficient scope to have perceptible influence of a strengthening nature on values. Prices are holding steady nevertheless.

During the first three months of 1929 exports of pulpwood from Canada, all of which came to the United States, totaled 341,266 cords, valued at $3,062,888, showing a decided decrease as compared with 466,949 cords of a declared value of $4,145,448 exported in the corresponding period of last year.

Mechanical Pulp

A fairly steady undertone characterizes prices of mechanical pulp, but the market is developing little change of any kind. Supplies are moving readily enough into consuming channels against contracts, but consumers are not eager for additional tonnage and there is not sufficient outside market demand to have effect on values. At the same time, grinders are possessed of firm price ideas and are more or less insistent on receiving the rates quoted. Instances are cited, in fact, where producers refuse orders at figures just a little under those they evidently feel they should secure under prevailing market circumstances, and the market appears freer of selling pressure than in a long time.

Domestic ground wood is offered sparsely because few U. S. grinders are producing more pulp than they themselves require, and the nominal price basis is around $27 a ton f. o. b. pulp mills. Canadian ground wood is quoted at $24 to $26 a ton in most cases, f. o. b. producing centers, while imported ground wood of Scandinavian origin is on a price level of $32 to $33 per short ton ex dock American Atlantic ports for dry pulp.

Production of ground wood in the United States in February amounted to 82,562 net tons, against 97,736 tons in the preceding month, according to the American Paper and Pulp Association, while stocks on hand at producing mills at the end of February were 86,575 tons, compared with 85,734 tons a month previously. Mills shipped out 1,977 tons in February, contrasted with 2,894 tons in January, and used 79,754 tons in February against 90,751 tons in the preceding month.

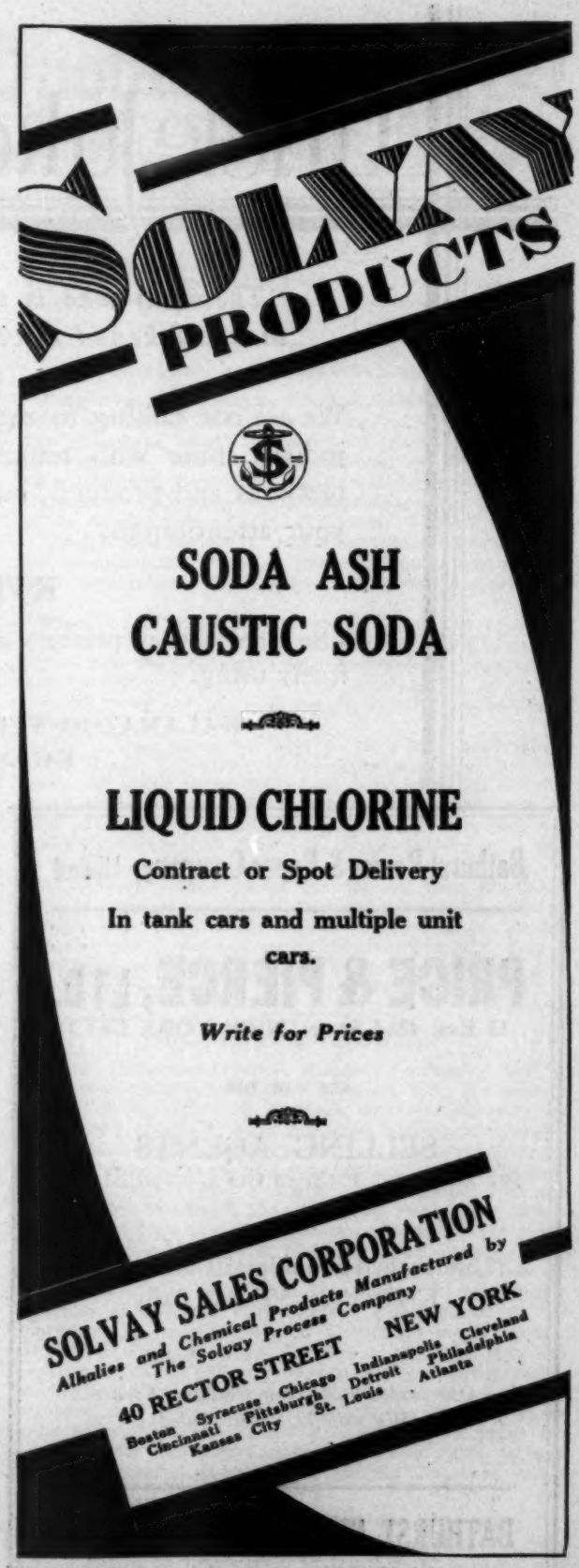
Chemical Pulp

The chemical wood pulp market is reported moderately lively, with a steady movement of most grades against contracts and with buyers operating in spot supplies on a fair scale. Prices appear well stabilized on levels that are showing scant change from day to day or week to week, and it is stated that most producing mills are well fixed with orders and are not pressing sales. Bleached sulphite of the more popular grades is selling at around 4 cents a pound, and up to 4.75 cents for the extra qualities, while strong sulphite of news grade is firm at about 2.60 cents or slightly higher, and of book grade at 2.75 to 3 cents per pound f. o. b. pulp plants. Domestic No. 1 kraft pulp is quoted at 2.75 to 3 cents at pulp mills, and bleached soda pulp is steady at around 3.50 cents a pound on a delivered paper mill basis.

Mills in the United States produced a total of 119,758 net tons of all grades of chemical pulp during February, compared with 133,295 tons in the preceding month, according to the American Paper and Pulp Association, while mill stocks at the end of February amounted to 21,253 tons, against 23,715 tons at the close of January.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.40–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.40–1.60



Uncle Jake Says—

"The man who is totally blind can see as much in a darkened cave as in the bright sunlight."

We are not talking to those who blind their eyes with prejudice, those who refuse to take advantage of improved methods and products, but to all others we respectfully call your attention to

KVP PAPERS

The papers that printers and business organizations are now freely using.

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Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.
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SELLING AGENTS
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Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

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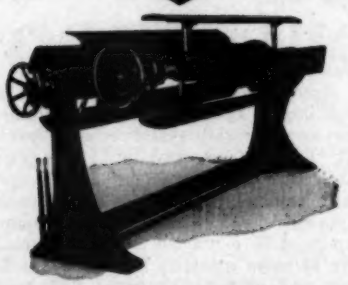

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One of several designs used by Paper Manufacturers and converters. We design and manufacture Toilet Winders, Napkin Folders, Crepe Embossing and Printing Machines, Package Presses and other equipment for the Paper Converter and manufacturer. Write for catalogue.

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GREEN BAY, WISCONSIN
Chicago Office: 574 Wrigley Bldg.
Manufacturers and Designers of Special Machinery

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	9–30
Colored sulphite	8–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	7–30
Colored sulphite	7–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–13.00
Lithograph, M. F.	7.50–14.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Covered stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.70– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	5.50– 6.00
No. 2 kraft	4.50– 5.00
Southern kraft	4.75– 5.00
Boards—	New York and Chicago
Solid news	35.00–40.00
Straw	52.50–57.50
Plain chip	32.50–35.00
White coated chip	45.00–50.00
Manila coated chip	40.00–45.00
Binder's board	65.00–70.00

Chemicals

(*Continued from page 355*)

No important revisions in quotations on papermaking chemicals are noted, but prices are steady to firm and the tendency in most cases is upward. Casein is reported selling at 16 to 16.25 cents a pound for the domestic product, with very little difference in prices quoted on the imported article, duty paid. Caustic soda is firm at 2.90 cents per pound f. o. b. works, and soda ash at 1.32½ cents, in bags.

Average quotations are as follows:

Alum, lump ammonia	3.50	– 3.75
Alum, lump starch	3.75	– 4.00
Blanc fixe, powder	3.50	– 3.75
Bleaching powder	2.00	– 2.35
Brimstone (long ton, at mine)	18.00	–20.00
Casein (duty paid)	16.00	–16.50
Caustic soda, spot delivery	2.90	– 3.00
China clay, domestic washed	8.00	–12.00
China clay, foreign	15.00	–20.00
Rosin, Grade E	8.25	–.....
Satin white	2.00	– 2.25
Soda ash, 50 per cent light (bags)	1.32½	–.....
Starch, papermakers', in bags	3.82	–.....
Talc (ton)	16.00	–18.00

Cellophane is Not Greaseproof Paper

Some important Customs Court decisions affecting paper have recently been made public, an unusual one being a ruling that cellophane is not a greaseproof paper as claimed by the importers. This commodity has been held to be dutiable as a compound of cellulose dutiable at 60 per cent by the United States Customs Court, but an appeal has been taken to the United States Court of Customs Appeals.

Chief Justice Fischer of the United States Customs Court has held that nearly 100 shipments of candy box padding were undervalued. The importers have appealed this case also.

Importers of ruled writing paper endeavored to secure a low rate of duty on such paper by describing it as printed paper, but the Customs Court approved the appraiser's classification.

Scotch wove and laid book papers were held to be undervalued.

Flint glazed paper was held to have been undervalued.

The Import Committee of the American Paper Industry which was active in the trial of the cases listed has also disclosed to government officials importations in the south of book paper, free of mechanical pulp, which were imported as standard newsprint duty free, though this paper is sold to the customers at upward of $5.35 per 100 lb.

A southern United States District Attorney has taken steps to force an importer of wrapping paper to pay a large amount of duty which the importer refused to pay on the assertion that it was improperly classified for duty. This is an unusual procedure as only in exceptional cases are customs collections handled by United States attorneys.

Forest Research Conference

At the Government Forest Research Conference held at the Forest Products Laboratory, Madison, Wis., the week of April 18 to 24, 1929, C. C. Heritage, who is in charge of the laboratory's studies in pulp and paper manufacture, stated that an investigation will be undertaken to attempt to find a chemical process for making pulp that will produce a good paper and also permit recovery of substantially all the chemicals in the effluent, thus practically eliminating stream pollution. Such a process would save money for the paper mills and preserve the purity of rivers and streams. Congress has appropriated $10,000 specifically for this research.

Progress is also being made in studying the microscopic structure of wood as described and demonstrated at the conference by Dr. G. J. Ritter. During his demonstration, Dr. Ritter displayed photomicrographs of fibers that had been separated not only into various layers of fibrils, but in which the minute strands of the fibrils themselves had been separated into short lengths shaped like toothpicks. These units called "fusiform bodies" and visible only under the highest power microscope, are believed by Dr. Ritter to have been photographed and separated for the first time in his investigation.

The Badger Paper Mills, Inc., Peshtigo, Wis., has just been admitted to membership in the American Paper and Pulp Association.

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

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Incorporated
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CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
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PULP

PERKINS-GOODWIN CO.
Established 1846
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PAPER

EXPORTS

While showing a decline from the January total, as might be expected because February was a shorter month, exports of paper from the United States during February, 1929, scored a sharp increase over the corresponding month last year, according to official statistics compiled by the U. S. Department of Commerce. The total exportations of paper of all kinds from this country in February last amounted in value to $3,225,410, contrasted with $3,522,573 in the preceding month, and $2,387,926 in February, 1928. Exports during the first two months of the current year reached a total value of $6,747,983, recording a large gain over shipments valued at $4,811,236 in the similar period a year ago.

Exports of newsprint paper in February were 3,542,884 pounds, valued at $125,541, against 3,405,360 pounds of a value of $122,745 in January last, and 1,035,654 pounds of a value of $39,304 in February of last year. Uncoated book paper exports in February reached a value of $207,985, compared with $318,942 in the preceding month, and $129,926 in February, 1928. On the other hand, export shipments of wrapping paper declined from a total value of $269,865 in February last year to $246,883 in the same month this year, and tissue paper exports decreased to a value of $65,300 in February last, as contrasted with $88,957 in the same month of 1928.

Writing paper exports in February were valued at $273,500, showing a good increase over the shipments in February a year ago valued at $205,235. Box board exports climbed in value from $124,227 in February, 1928, to $134,038 in February this year, while other paper board and strawboard shipments were valued at $160,343 last February, against $135,025 in the same month a year ago. Vulcanized fiber exports in February were valued at $145,309, compared with $99,732 in the similar month of 1928.

IMPORTS

Wood Pulp

The market for imported wood pulp in the United States is not as active as it was some time ago, but there is nevertheless fair demand reported for most of the major classes of chemical pulp, consumers in some instances are operating as buyers on a moderately good scale, and a distinctly steady tone characterizes prices. There has been little change in quotational levels recently, but such slight alterations as have been recorded have been in an upward direction mostly, and it can be said that prices today are better stabilized on well-established levels than has been the case in some months.

Several factors of importance are contributing to the steadiness of wood pulp values. One is that mills abroad—in Scandinavia, in Germany and in other European countries—are well sold up for this year; in fact, some producers on the other side of the Atlantic are said to have little or no additional supply of pulp to offer for 1929, and sales of fair-sized tonnage have been made into 1930. Another factor is, so reports state, that expected increased production of some grades of pulp in Scandinavia has not materialized in the volume predicted, and still another is that England has been a big buyer of pulp this year and has contracted for such large supplies that the tonnage available to American buyers is said to be somewhat restricted. Scandinavian manufacturers can afford to be a bit independent in their attitude on prices because they are not pressed to sell, and in most cases are reported holding whatever unsold tonnage they have for delivery over the balance of this year at firm rates.

Importations of chemical wood pulp into the United States during February were smaller than in the preceding month, totaling 105,577 long tons of all grades of chemical, valued at $6,169,329, against 135,036 tons of a value of $7,843,546 in January, and 116,157 tons of a value of $6,643,529 imported in February, 1928. The fall in February imports was to be expected, both because that is a short month and because shipments from abroad decrease during the closed navigation season over the Baltic Sea. Ground wood imports in February were 12,704 long tons, valued at $349,968, as contrasted with 23,064 tons of a declared value of $584,859 in the preceding month, according to official figures compiled by the U. S. Department of Commerce.

Market prices of strong sulphite have stiffened to where 2.65 cents per pound is about the lowest basis quoted by importers and agents in New York for prime sulphite, and spot lots generally are held firmly for 2.70 cents or higher. There was quite a run of demand on strong sulphite early in April, when paper manufacturers in some instances bought fairly heavily. Prime easy bleaching sulphite is firm at 2.85 to 2.90 cents, with above these figures asked for extra grades, and prime bleached sulphite is steady at 3.75 to 4 cents ex dock American Atlantic ports and higher for some mill brands. Prime Swedish kraft pulp has firmed slightly to where 2.50 cents per pound ex dock New York is the price usually quoted, though it is said that this may be shaded a dollar per ton to 2.45 cents in some quarters. Scandinavian ground wood of prime quality and for forward shipment from abroad is quoted at $32 to $33 per short ton ex dock American Atlantic ports for dry pulp.

Current market quotations ex dock New York, and receipts at the port of New York during April, 1929, follows:

Bleached sulphite, No. 1	3.75– 4.25
Unbleached sulphite, strong No. 1	2.65– 2.80
Unbleached sulphite, No. 2	2.50– 2.65
Easy bleaching sulphite	2.80– 3.00
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.65– 2.80
Kraft, standard Swedish	2.45– 2.60
Ground wood, per ton (dry)	32.00–33.00

Parsons & Whittemore, 420 bls. from Gothenburg; Atterbury Bros., 2,500 bls. from Oslo; Funch, Edye & Co., 71 bls. from Oslo; E. M. Sergeant Co., 1,969 bls. from Gothenburg; Kidder, Peabody & Co., 374 bls. from Gothenburg; Price & Pierce, 3,875 bls. from Gothenburg; Chemical National Bank, 877 bls. from Hamburg and 180 Oslo; Central National Bank, 1,250 bls. from Hamburg; Bulkley, Dunton & Co., 400 bls. from Hamburg and 3,325 Gothenburg; Person & Weidhorn, 52 bls. from Antwerp; Johaneson, Wales & Sparre, 299 bls. from Gothenburg; A. P. W. Paper Co., 20,342 bls. ground wood from Sheet Harbor; Castle & Overton, 1,275 bls. from Hamburg; J. Andersen & Co., 2,160 bls. from Oslo; Farmers Loan & Trust Co., 200 bls. from Oslo; M. Gottesman & Co., 1,705 bls. from Rotterdam and 600 Gothenburg; E. J. Keller Co., 400 bls. from Bremen and 400 Gothenburg; Fagel, Horton & Co., 1,250 bls. from Stockholm; O. E. Klaer, 300 bls. from Stockholm and 222 Gothenburg; Woodpulp Service Corp., 125 bls. from Gothenburg; Order, 14,280 bls. from Hernosand, 3,451 Helsingfors, 2,301 Hango, 1,000 Oslo and 260 Hamburg.

Paper Stock

The United States imported papermaking rags to the amount of 29,790,757 pounds, of a declared value of $582,814, in February, compared with 36,664,383 pounds of a value of $671,761 in the preceding month, according to official statistics issued by the U. S. Department of Commerce. Imports of waste bagging and waste paper combined in February amounted to 10,102,187 pounds, against 12,505,554

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Conveyor or Gravity Feed Shredder

Give Beaters a Lift

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 364 and 365 in the 1928 *Paper and Pulp Mill Catalogue*

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Let Us Show You How to Solve It

It's the type of roll that holds the answer—
and it's the kind of roll we furnish

STOWE & WOODWARD CO.

The Rubber Roll Makers Newton Upper Falls, Mass.

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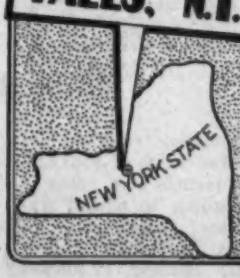

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TOP FELTS for BOARD MACHINES
That give PRODUCTION and FINISH.

THE WATERBURY FELT CO.

pounds in January last, while importations of old rope and miscellaneous paper stock in February totaled 4,166,586 pounds, contrasted with 6,840,732 pounds in the preceding month.

Imports of papermaking materials in April, judging from unofficial data of receipts through the port of New York last month, were heavy. There were some large lots of rags brought in at New York, while imports of bagging and old rope increased over the several previous months. Imports of all grades of paper stock excepting wood pulp at the port of New York during April, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Nat E. Berzen, 91 coils; Brown Bros. & Co., 1,540 coils and 429 bls.; W. Schall & Co., 52 rolls; Irving Trust Co., 118 bls.; Ellerman's Wilson Line, 75 coils; Banca Commerciale Italiana Trust Co., 99 bls.; Panama Railroad Steamship Co., 46 bls.; Harry Miller, 81 bls.; Bank of the Manhattan Co., 414 coils; Guaranty Trust Co., 45 bls.; Overton & Co., 49 coils and 62 bls.; Anglo-South American Trust Co., 48 coils; William Steck & Co., 76 bls.; Equitable Trust Co., 26 bls.; Goschens & Cunliffe, 75 coils; United Fruit Co., 12 bls.; International Purchasing Co., 196 coils; T. D. Downing & Co., 85 bls.; E. J. Keller Co., 152 bls.; Order, 101 coils.

Old Bagging—Katzenstein & Keene, 536 bls.; Bank of New York & Trust Co., 112 bls. bls.; George W. Millar & Co., 54 bls.; W. Schall & Co., 147 bls. Banca Commerciale Italiana Trust Co., 101 bls.; Overton & Co., 1,115 bls.; E. J. Keller Co., 320 bls.; Goldman, Sachs & Co., 42 bls.; A. W. Fenton, Inc., 71 bls.; Darmstadt, Scott & Courtney, 137 bls.; Castle & Overton, 178 bls.; International Purchasing Co., 38 bls.; R. F. Downing & Co., 71 bls.; Daniel I. Murphy, Inc., 463 bls.; Guaranty Trust Co., 311 bls.; National Bank of Commerce, 23 bls.; Order, 289 bls.

Rags—Darmstadt, Scott & Courtney, 141 bls.; Castle & Overton, 1,622 bls.; American Rag Trading Co., 187 bls.; Albany Fiber Co., 10 bls.; Ernst Mayer, 162 bls.; Atlas Waste Mfg. Co., 9 bls.; American Overocean Corp., 84 bls.; Alexander H. Searle, Inc., 660 bls.; Whaling Waste Products Co., 143 bls.; N. S. Maloof, 8 bls.; Victor Galaup, Inc., 496 bls.; S. Birkenstein & Sons, 319 bls.; J. Cohen & Sons, 45 bls.; E. Butterworth & Co., 257 bls.; Katzenstein & Keene, 360 bls.; Harry & Ben L. Gerofsky, 7 bls.; S. Schapiro & Sons, 165 bls.; Charles Belsky & Co., 221 bls.; Kidder-Peabody Acceptance Corp., 211 bls.; Fritz Stern, 170 bls.; P. Garvan, Inc., 97 bls.; Jaffe Products Co., 67 bls.; State Bank, 10 bls.; Guaranty Trust Co., 22 bls.; Standard Bank of South Africa, 82 bls.; Madison State Bank, 16 bls.; Advance Import Co., 5 bls.; C. R. Spence & Co., 31 bls.; Anglo-South American Trust Co., 177 bls.; Amtorg Trading Co., 1,443 bls.; Irving Trust Co., 37 bls.; W. Schall & Co., 429 bls. R. F. Downing & Co., 183 bls.; Gallagher & Ascher, 36 bls.; Manufacturers Trust Co., 99 bls.; French-American Banking Corp., 679 bls.; Equitable Trust Co., 557 bls.; Bank of America, 8 bls.; National City Bank, 293 bls.; Public National Bank & Trust Co., 38 bls.; Bank of the United States, 95 bls.; Bank of the Manhattan Co., 529 bls.; National Bank of Commerce, 236 bls.; Fidelity Trust Co., 136 bls.; Chemical National Bank, 129 bls.; Philadelphia National Bank, 27 bls.; Banca Commerciale Italiana Trust Co., 110 bls.; A. W. Fenton, Inc., 315 bls.; Porto Rican Express Co., 60 bls.; Amsinck, Sonne & Co., 20 bls.; Brown Bros. & Co., 353 bls.; Milton Snedeker Corp., 53 bls.; Barrett Co., 418 bls.; American Express Co., 120 bls.; Goldman, Sachs & Co., 92 bls.; Overton & Co., 308 bls.; Worthy Paper Co., 5 bls.; Johns-Manville Corp., 80 bls.; Order, 2,687 bls.

Miscellaneous Paper Stock—Daniel M. Hicks, Inc., 502 bls.; George W. Millar & Co., 56 bls.; E. J. Keller Co., 1,725 bls.; Whaling Waste Products Co., 275 bls.; Castle & Overton, 305 bls.; Gardiner & Cook, 26 bls.; E. Butterworth & Co., 194 bls.; R. F. Downing & Co., 311 bls.; Darmstadt, Scott & Courtney, 5 bls.; Salomon Bros. & Co., 711 bls.; Brown Bros. & Co., 314 bls.; Alexander H. Searle, Inc., 368 bls.; T. D. Downing & Co., 165 bls.; J. Cohen & Sons, 49 bls.; Chase National Bank, 319 bls.; Van Oppen & Co., 116 bls.; Chemical National Bank, 112 bls.; W. Schall & Co., 37 bls.; Equitable Trust Co., 218 bls.; Warren Manufacturing Co., 62 bls.; Bank of the Manhattan Co., 256 bls.; Katzenstein & Keene, 66 bls.; Merchants National Bank, 50 bls.; William Steck & Co., 188 bls.; Anglo-South American Trust Co., 108 bls.; A. W. Fenton, Inc., 166 bls.; Amtorg Trading Co., 70 bls.; Interstate Trust Co., 135 bls.; Guaranty Trust Co., 47 bls.; Philadelphia National Bank, 87 bls.; American Express Co., 86 bls.; Furness, Withy & Co., 137 bls.; Order, 386 bls.

Paper

There was a fairly sharp decrease in importations of paper into the United States in February last as compared with the preceding month. The total imports of paper of all kinds in February reached a value of $11,550,497, as contrasted with imports valued at $13,611,138 in January this year, and $12,761,193 in February, 1928, according to U. S. Department of Commerce statistics.

However, unofficial figures show that paper imports during April were on a large scale and perhaps were heavier than in any month this year thus far. Arrivals of all kinds of paper at the port of New York in April, 1929, these data being taken from manifests of steamers reaching that port during last month, were as follows:

Printing—Walker-Goulard-Plehn Co., 112 cs. from Stockholm; Journal of Commerce, 150 reels from Stockholm and 74 reels Hamburg; Martin & Bechtold, 12 cs. from Bremen; E. Dietzgen & Co., 171 cs. from Rotterdam and 16 cs. Hamburg; Perkins-Goodwin Co., 1,169 reels from Hamburg and 435 reels Rotterdam; B. F. Drakenfeld & Co., 121 cs. from Liverpool; F. Henjes, Jr., 136 reels from Hamburg; P. C. Zuhlke, 85 cs. from Antwerp

Throw the Spotlight on Your Process!

Maybe the trouble is sticking at the dryers? Mills using Quartz Quality silicate of soda find that the sheet runs through without a hitch. Silicate of soda helps to compact the surface fibers and so prevents them from sticking at the dryers. It is also possible to speed up the machine when silicate is used in the beater. Try it out in your mill to speed up production.

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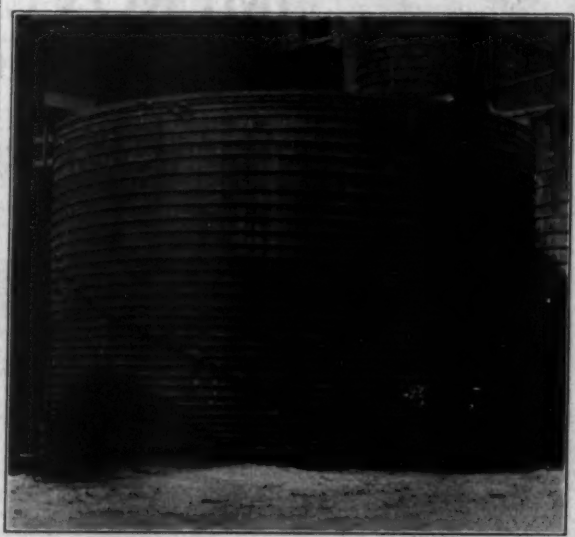
Chicago Office: 205 W. Wacker Dr.

WOOD TANKS TILE



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NO TANK is too large and none too small for our tank-making equipment and stocks. We cater to the needs of the paper industry. Blow Pits, Vomit Stacks, Stock Tanks, Acid Storage Tanks, Stuff Chests, Agitators, etc. See our Condensed Catalog in Paper and Pulp Mill Catalog. Ask us about our Glazed Tile Tanks.

Tank Builders Since 1867

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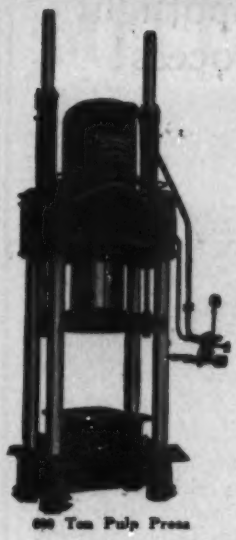

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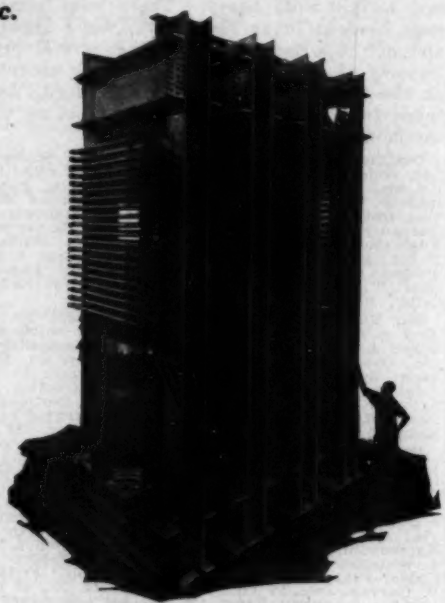

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CHAMPION
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MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue

and 38 cs. Bremen; Stora Kopparberg Corp., 155 reels from Gothenburg; H. Reeve Angel & Co., 170 rolls from Gothenburg; Hudson Trading Co., 219 rolls from Gothenburg; P. Puttmann, 13 cs. from Havre; Keuffel & Esser Co., 25 rolls from Hamburg; Hoboken Trust Co., 4 cs. from Bremen; A. S. Zabriskie, 76 reels from Stockholm; Order, 614 reels and 5 cs. from Bremen, 41 cs. and 511 reels Stockholm, and 84 bls. and 715 reels Hamburg.

Wrapping—D. S. Walton & Co., 526 rolls and 9 bls. from Gothenburg; W. L. Haas, 8 cs. from Rotterdam; Atlantic Forwarding Co., 11 cs. from Hamburg; E. Dietzgen & Co., 3 cs. from Antwerp; Standard Products Corp., 14 cs. and 5 rolls from Antwerp; F. C. Strype, 7 cs. from Antwerp; Birn & Wachenheim, 166 cs. from Antwerp; Steffens, Jones & Co., 10 cs. from Antwerp; Arkell Safety Bag Co., 365 reels from Gothenburg; Gilbert Paper Co., 216 reels and 87 bls. from Gothenburg; Thomas Barrett & Son, 133 bls. from Gothenburg; Crepe-Kraft Co., 78 reels from Gothenburg; C. G. Winans Co., 597 reels and 20 bls. from Gothenburg; Borregaard Co., 2,643 reels and 404 bls. from Gothenburg; Manhattan Paper Co., 21 bls. from Gothenburg; Wilkinson Bros. & Co., 129 bls. and 447 rolls from Gothenburg; C. K. MacAlpine & Co., 292 bls. from Gothenburg; J. & H. Goodwin, 4 bls. from Cape Town; H. Reeve Angel & Co., 4 cs. from Antwerp; Robert Wilson Paper Corp., 9 cs. from Glasgow; Order, 22 cs. from Hamburg.

Cigarette—Standard Products Corp., 609 cs. from Havre; P. J. Schweitzer, Inc., 41 cs. from Havre and 191 cs. Marseilles; Southern Pacific Co., 3 cs. from Havre; British-American Tobacco Co., 100 cs. from Southampton; American Tobacco Co., 773 cs. from Bordeaux; DeManduit Paper Corp., 908 cs. from St. Nazaire; M. Spiegel & Sons, 9 bls. from Genoa.

Writing—Guibont Freres & Co., 23 pkgs. from Havre; Independent Forwarding Co., 5 cs. from Southampton; American Express Co., 150 cs. from Marseilles; Distinctive Writing Paper Co., 8 cs. from Havre; Order, 16 cs. from Hamburg.

Filter—C. G. Euler, 30 bls. from Bordeaux; Importers and Consumers Co., 4 cs. from Havre; H. Reeve Angel & Co., 30 cs. from London and 35 cs. Southampton; J. Manheimer, 184 bls. from Southampton; A. Giese & Son, 55 bls. from Southampton; C. Sleicher & Schull Co., 5 cs. from Hamburg; G. Lueders & Co., 2 cs. from Havre.

Drawing—Keuffel & Esser Co., 13 cs. from Rotterdam, 105 cs. and 32 rolls Hamburg, and 8 cs. Havre; H. Reeve Angel & Co., 3 cs. from London and 15 cs. Southampton; G. Haas, 6 cs. from London; Order, 4 cs. from Hamburg.

Tissue—Schenkers, Inc., 259 cs. from Hamburg and 3 cs. Bremen; D. C. Andrews & Co., 2 cs. from Liverpool; F. C. Strype, 25 cs. from Hango; B. P. Drakenfeld & Co., 6 cs. from Southampton and 2 cs. Liverpool; Parsons & Wittemore, 4 cs. from Liverpool; F. B. Vandegrift & Co., 3 cs. from Liverpool; J. B. Mast & Co., 4 cs. from Genoa.

Hanging—A. C. Dodman, Jr., Inc., 2 cs. from Havre, 8 bls. Bremen, 9 cs. Southampton and 28 bls. Liverpool; F. J. Emmerich & Co., 69 bls. from Hamburg, 23 bls. Liverpool and 6 bls. Southampton; Stern, Stiner & Co., 6 bls. from Hamburg; Chatham & Phenix National Bank, 2 bls. from Hamburg; C. A. Haynes & Co., 9 bls. from Liverpool and 112 bls. London; Wedemann, Godknecht & Lally, 12 bls. from Hamburg; Irving Trust Co., 15 cs. from Hamburg; J. E. Bernard & Co., 5 cs. from Bremen and 5 cs. Southampton; W. H. S. Lloyd & Co., 18 bls. from London; American Express Co., 2 cs. from London; International Mercantile Marine Co., 14 pkgs. from Southampton; R. F. Downing & Co., 15 bls. from London; F. A. Binder, 4 bls. from Bremen.

Photo—Medo Photo Supply Corp., 2 cs. from Liverpool; J. J. Gavin & Co., 6 cs. from Liverpool; Globe Shipping Co., 227 cs. from Bremen; J. H. Schroeder Banking Corp., 183 cs. from Bremen; Gaevert Co. of America, 473 cs. from Antwerp and 83 cs. Rotterdam; P. C. Zuhlke, 95 cs. from Antwerp and 116 cs. Bremen; P. Puttmann, 15 cs. from Antwerp.

Board—Coty, Inc., 217 cs. from Havre; Lagerloef Trading Co., 856 reels from Hango, 178 cs. Bremen, and 461 bls. and 300 reels Hamburg; Grand Corrugated Paper Co., 162 reels from Rotterdam; American Express Co., 270 cs. from Hamburg; Chatham & Phenix National Bank, 33 bls. from Gothenburg; H. Fuchs & Son, 73 bls. from Gothenburg; C. H. Powell & Co., 293 reels from Rotterdam; Adrian Vuyck, 424 bls. from Rotterdam; Walker-Goulard-Plehn Co., 800 pkgs. from Rotterdam; G. M. Thurmann, 28 cs. from Antwerp; D. A. Young, 240 pkgs. from Rotterdam; Wilkinson Bros. & Co., 32 reels from Gothenburg; Premier-Flong Co., 43 cs. from Bremen; Robert Wilson Paper Corp., 243 reels from Rotterdam; Order, 48 bls. from Hamburg.

Miscellaneous—Japan Paper Co., 28 cs. from Havre, 4 cs. London and 2 cs. Genoa; Keller-Dorian Paper Co., 71 cs. from Havre; Coenca-Morrison Co., 5 cs. from Havre and 3 cs. Hamburg; F. L. Kraemer & Co., 3 cs. from Havre, 2 cs. Southampton and 29 cs. Bremen; S. Gilbert, 120 cs. from Bremen and 4 cs. London; P. H. Petry & Co., 4 cs. from Bremen and 295 cs. Hamburg; J. Beckhardt & Co., 76 cs. from Bremen; International Forwarding Co., 4 cs. from Rotterdam and 24 cs. Hamburg; Causon & Montgolfer, 53 cs. from Havre; International Clearing House, 33 cs. from Havre; Corn Exchange Bank, 38 cs. from Kobe; F. C. Strype, 4 cs. from Yokohama; Irving Trust Co., 3 cs. from Southampton; Whiting-Patterson Co., 47 cs. from Southampton; Quality Art Novelty Co., 2 cs. from Bordeaux and 29 cs. Hamburg; Brown Bros. & Co., 5 cs. from Hamburg; Steiner Paper Co., 3 cs. from Kobe and 126 cs. Rotterdam; Borden & Riley Paper Co., 25 cs. from Antwerp; Louis DeJonge & Co., 2 cs. from Antwerp; Titan Shipping Co., 10 cs. from Bremen and 5 cs. Havre; Universal Carloading and Distributing Co., 58 cs. from Bremen and 5 cs. Hamburg; Judson Freight Forwarding Co., 9 cs. from Bremen; F. Murray Hill, Inc., 19 cs. from Bremen; Gallagher & Ascher, 31 cs. from Bremen; B. E. Lloyd Paper Co., 5 cs. from Genoa; Hensel, Bruckmann & Lorbacher, 33 cs. from Bremen; Tamm & Co., 31 cs. from Bremen; D. C. Andrews & Co., 13 cs. from Rotterdam; Heemsoth & Basse, 21 pkgs. from Rotterdam and 2 bls. Bremen; Dingelstedt Co., 9 cs. from Rotterdam and 3 cs. Bremen; Globe Shipping Co., 97 cs. from Rotterdam; J. B. Wood, 24 cs. from Havre; Vernon Bros. Paper Co., 34 cs. from Glasgow; Quality Art Novelty Co., 20 bls. from Hamburg; Central Union Trust Co., 59 cs. from Hamburg; Walker-Goulard-Plehn Co., 10 cs. from Oslo; H. D. Catty & Co., 2 cs. from Antwerp; G. W. Sheldon & Co., 3 cs. from London and 4 cs. Southampton; Nepayco Paper Co., 13 cs. from Havre; P. C. Zuhlke, 8 cs. from Rotterdam; J. J. Shore & Co., 17 cs. from Antwerp; Davies, Turner & Co., 167 cs. from Florence; Meadows, Wye & Co., 25 cs. from Rotterdam.

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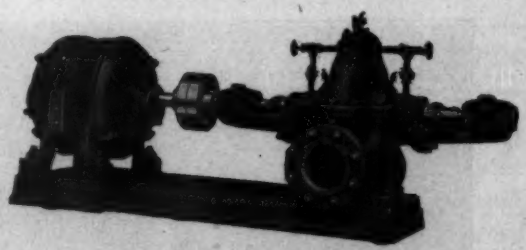

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The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 37237—Paper cups. Toronto, Canada. Purchase desired.

No. 37213—Leather boards, hand and machine made, for the boot and shoe trade. Mount Sorrel, England. Purchase desired.

No. 37214—Offset paper, coated, and sulphite paper. Guatemala City, Guatemala. Purchase desired.

No. 37212—Paper of various kinds, especially packing papers. Nottingham, England. Purchase and agency desired.

No. 37236—Parchment paper, imitation, for bread wrappers. Cape Town, South Africa. Purchase and agency desired.

No. 37239—Printing paper. Lima, Peru. Agency desired.

No. 37145—Talc for papermakers. Helsingfors, Finland. Agency desired.

No. 37366—Board, insulating. Potsdam, Germany. Agency desired.

No. 37333—Paper milk bottles. Vienna, Austria. Purchase desired.

No. 37469—Wood pulp, and other papermaking materials. Glossop, England. Purchase desired.

No. 37334—Wall and insulating board. Plymouth, England. Agency desired.

No. 37351—Wall board and insulating board. Santo Domingo, Dominician Republic. Agency desired.

No. 37382—Wrapping paper. San Juan, Porto Rico. Agency desired.

No. 37553—Paper milk bottles. Hamburg, Germany. Agency desired.

No. 37570—Overissued newspapers. Karachi, India. Purchase desired.

No. 37554—Paper, treated, for making gaskets. Warwickshire, England. Purchase and agency desired.

No. 37639—Wall paper. La Paz, Bolivia. Purchase desired.

No. 37599—Writing paper, papeteries, and paper novelties. Regina, Canada. Purchase and agency desired.

No. 37764—Vulcanized fiber, in sheets, tubes and bars. Milan, Italy. Sole agency desired.

No. 37784—Newsprint paper. Manila, P. I. Agency desired.

No. 37835—Printing, writing, sulphite, greaseproof, parchment, art, ivory-board cover, fancy embossed cover, chrome blotting, draft, ledger, manifold, and marble paper. Osaka, Japan. Purchase desired.

No. 37812—Wall boards, insulating. Berlin, Germany. Agency desired.

No. 37921—Writing paper, boxed, for men. Maracaibo, Venezuela. Purchase desired.

No. 37813—Wall boards for insulating. Berlin, Germany. Agency desired.

New Catalogues, Books and Publications

Erie City Iron Works, Erie, Pa.—The Seymour-Carbofrax Water Cooled Refractory Furnace, combining high duty, wide load range, durability, simplicity and ease of operation, is described in a new eight-page bulletin issued by this company. An illustrated description of the installations of these furnaces at The Carborundum Co., is also included.

General Electric Co., Schenectady, N. Y.—Several new bulletins have been issued descriptive of the following: G-E Automatic Control Panels for industrial electric heating; CR7006-D7 and -D9, AC enclosed magnetic switches; G-E tempering baths, electrically heated; CR 9505-A1 and B1 Solenoid-operated valves; and type FT general purpose squirrel-cage motors.

James Leffel & Co., Springfield, Ohio—In a bulletin W202, there is an illustrated description of an installation of Leffel water wheels for the Arkansas Power and Light Co. Complete construction details are included and there is a list of other installations by this company.

Link-Belt Co., Chicago, Ill.—A 38-page book, No. 1167, shows detailed specifications of the 15,000 sprocket wheels this company now carries in stock at Chicago and Philadelphia. Copy upon request.

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PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

Metropolitan Life Insurance Co., New York City—A selection of typical training courses for foremen and supervisory forces for large and small companies in various fields and under varying conditions has just been released in report form under the title "Foremen Training Plans". Practical questions often asked by executives are answered. In compiling this information plans that have been tried and proved by large corporations have been consulted. A limited supply of these reports is available upon application by executives of industrial concerns to the Policyholders Bureau of this company, One Madison Ave., New York.

A. C. Nielsen Co., 4450 Ravenswood Ave., Chicago, Ill.—Nielsen Survey No. 1232. Processed vs. White Felts on Fourdrinier. Better Performance Gives Cost Advantage of $.344 a ton. The adoption of specially processed felts for the first position of a machine running book papers has saved the entire cost of felts by the reduction of lost machine time. This report o utlines a significant experience, of interest to every paper mill man.

These surveys are ordinarily available only to Nielsen Survey index subscribers, but by special arrangement a complimentary copy will be sent to any user of such equipment who will write directly to the company asking for surveys by number and mentioning THE PAPER INDUSTRY.

Sullivan Machinery Co., Chicago, Ill.—A new booklet, No. 83-L, is entitled "Sullivan Angle Compound Air Compressors Direct Connected to Diesel Engines". This booklet contains many illustrations of diesel engine compressor plants, which have been installed in all parts of the country for many different kinds of service, both mining, construction and industrial. Sizes of stock units are given and the Sullivan four-cylinder "V" type single acting compressors are listed and shown direct connected to oil engines. Copies upon request.

BOOK REVIEWS

Kramfors Aktiebolag, Its Development and Organization—This work, dedicated by the author, J. Mannerheim, to the "friends of Kramfors" is a brief account in word and picture of the history of Kramfors Aktiebolag, Kramfors, Sweden, its organization and personnel. The handsome volume of 112 pages is beautifully bound and has been compiled with utmost care. Rarely is so choice a collection of photography grouped in one work as has been collected for this book. There are magnificent aerial views of the streams, mountains and forests of Sweden; the logging operations of the company, the interior of its plants, power station and its fleet of steamships.

Kramfors Aktiebolag manufactures both sulphite and sulphate pulp. Its mills are run throughout by electricity which is supplied from its own power plant at Edsele. The present plants, equipped with the most modern machinery, have grown out of the company's early operation of sawmills, the first of which was built in 1744.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The Paper Industry, published monthly at Chicago, Illinois, for April 1, 1929.

State of Illinois, County of Kane, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward B. Fritz, who, having been duly sworn according to law, deposes and says that he is the publisher of The Paper Industry and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.; Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Managing Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Business Managers, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securites than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

EDWARD B. FRITZ,
(Signature of editor, publisher, business manager, or owner.)

Sworn and subscribed before me this 22nd day of March, 1929.

[SEAL] W. B. LATHROP, Notary Public.
(My commission expires July 11, 1930.)

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